VET SCORER

(Complete Solution of Veterinary Science)

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Preface

A good question bank of Veterinary science is a long-time demand of Undergraduate and Postgraduate students. The Vet Scorer has been prepared on the basis of new regulations of Veterinary Council of India. It is a subject wise solution of Veterinary Science with representative questions of every subject from entire syllabus. The Vet Scorer is prepared keeping Undergraduate examinations, ICAR-JRF, ICAR-SRF, NET Examination and Public Service Commission (PSC) examination of different states into consideration for which the subject-wise summary is supplied for quick revision. B.V.Sc. & A.H., M.V.Sc. and Ph.D. students along with all competitive examinations aspirants would find this book as a complete guide of Veterinary Science.

Although authors have tried to prepare the Vet Scorer in a unique manner and the matter has been presented in a very simple language, yet we encourage suggestions and corrections from the users of this book for incorporating them in the next edition.

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About the Authors



Dr. Shailesh Kumar Patel is an Assistant Professor, Department of Veterinary Pathology, College of Veterinary Science and Animal Husbandry, Bilaspur, Chhattisgarh. He was a brilliant student throughout his carrier and **Topper of the B.V.Sc & A.H.** He has received **Seven Gold medals, Academic Excellence award** and **Merit Scholarship award** during his B.V.Sc. & A.H. programme. He has completed M.V.Sc and Ph.D degree from IVRI, Izatnagar, Bareilly, U.P. and awarded with **Best M.V.Sc thesis award** by the Indian Association of Veterinary Pathologists. He has also qualified **CSIR-JRF, UGC-JRF** and **ICAR-SRF (AIR - 01).** He was awarded with **Young Scientist Awards** by Indian Association of Veterinary Pathologists (2021), Association of Animal Scientists (2020) and Society of Biological Sciences and Rural Development (2020) for outstanding contribution in the field of Veterinary Sciences and Animal Husbandry. He has life membership of 05 national scientific societies. He has published more than 80 research and review articles in National and International Journals, 04 books and 05 laboratory manuals for undergraduate and postgraduate teaching. He is having research experience of 7 years including M.V.Sc. and Ph.D along with teaching experience of 4.5 years as assistant professor.



Dr Jigyasa Rana earned her B.V.Sc & A.H. degree from Nanaji Deshmukh Veterinary Science University, Jabalpur, Madhya Pradesh in 2013. Thereafter she has completed her Master degree programme and obtained M.V.Sc. in 2015 from Department of Veterinary Anatomy, G. B. Pant University of Agriculture and Technology, Pantnagar. The author has completed her Ph.D. in the Discipline of Veterinary Anatomy and Histology, at Nagpur Veterinary College, M.A.F.S.U., Nagpur in 2018. She has worked as Teaching Personnel in G.B.P.U.A.T., Pantnagar for few months and Veterinary Assistant Surgeon from 2018 to 2019 for a period of around 1.5 years in Madhya Pradesh Animal Husbandry Department. At present she is working as Assistant Professor in the Department of Veterinary Anatomy, FVAS, Rajiv Gandhi South Campus, Banaras Hindu University, Barkachha. She has life membership of 4 national scientific socities. She has also qualified NET-Examination during 2016. She has got **AIR-1** in **ICAR-SRF** examination in 2016 and was awarded with **ICAR-SRF.** She has been awarded with **Young Scientist Award** by SBSRD, Prayagraj (U.P.) in 2018 and **Research Excellence Award** by Institute of scholars in 2020. She has authored two books and more than 45 research papers in National and International Journals. She is having research experience of 7 years including M.V.Sc. and Ph.D along with teaching experience of 2.5 years as assistant professor.



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Unit – 1

Veterinary Anatomy and Histology

Classification of the Glands

A. Based on morphologic characteristics

Unicellular gland- Ex. **goblet cell**

Multicellular gland- Ex. **exocrine and endocrine gland**

Forms of Exocrine glands

Simple glands	Compound glands
» Simple tubular glands **1. Straight tubular gland** Ex: Glands of the large intestine **2. Coiled tubular gland** Ex: Sweat gland of skin **3. Branched tubular gland** Ex: fundic, pyloric and cardiac glands of gastric mucous membrane, Uterine gland	» Compound tubular gland Ex: Kidney and Testis
» Simple alveolar glands Ex: Sebaceous gland	» Compound alveolar gland Ex: Mammary gland
» Simple tubulo-alveolar glands Ex: Brunner's gland of the duodenum	» Compound tubule-alveolar glands Ex: Parotid gland, Pancreas

B. Based on the nature of the secretory product

Cytogenous	Non – cytogenous
Ex: Testis, Ovary	Mucous gland Ex: Goblet cells, Palatine and mandibular gland
	Serous gland Ex: Pancreas and Parotid salivary gland
	Mixed gland Ex: Submandibular and Sublingual salivary gland

C. Based on the mode of release of the secretory product

1. Merocrine or eccrine gland (no loss) Ex: Salivary glands
2. Holocrine gland (complete loss) Ex: Sebaceous gland
3. Apocrine gland (apical part is lost along with secretion) Ex: Mammary gland

Vertebral column (Number of vertebrae)

Species	Cervical	Thoracic	Lumbar	Sacral	Coccygeal	Total
Ox	7	13	6	5	15-25	46-56
Horse	7	18	6	5	16-22	52-58
Dog	7	13	7	3	18-25	48-55
Pig	7	14-15	6-7	4	18-24	49-56
Fowl	14	7	14	-	4-9	39-44

Number of bones

Species	Carpal	Tarsal	Ribs (Pair)	Digits (Each limb)	Sternal Segments	Metatarsal
Ox	6	5	13	2	7	2
Horse	7	6	18	1	7	3
Dog	7	7	13	5	8	5
Pig	8	7	14 to 15	2	6	4
Fowl	2	-	7	3	1	1

Visceral bones

S. No.	Bone	Position	Species
01	Os cordis	Heart	Ox
02	Os phrenic	Diaphragm	Camel
03	Os penis	Penis	Dog
04	Os rostrale	Rostrum	Pig
05	Os opticus	Sclera	Fowl

Placenta

On the basis of histology	Layers	Species
Epitheliochorial (Diffuse)	All six layers are present	Horse / Pig / Camel
Syndesmochorial (Cotyledonary)	Maternal epithelium is absent	Cattle / Sheep / Goat
Endotheliochorial (Zonary)	Maternal epithelium and connective tissue is absent	Dog / Carnivores
Hemochorial	Maternal blood in contact with chorionic epithelium	Mammals / Primates

Joints

Type	Classification	Example
Diarthrodial / Synovial (Freely Movable)	Ball and socket (Enarthrodial)	Shoulder joint / Hip joint
	Hinge (Ginglymus)	Elbow joint
	Saddle (Arthrodial)	Carpal joint
	Pivot (Trochoid joint)	Atlanto axial joint
Synarthrodial / Fibrous (Immovable)	Suture	Joints between skull bone
	Gomphosis	Between root of teeth and alveolar socket
	Syndesmosis	Between tibia and fibula, radioulnar joint
Amphiarthrodial / Cartilaginous (Slightly movable)	Symphysis	Pelvic symphysis
	Synchondrosis	Between sphenoid and occipital bone

Largest, Longest and Smallest

S. No.	Largest	
01	Organ of the body	Skin
02	Gland of the body	Liver
03	Nerve of the body	Sciatic
04	Bone of the body	Femur
05	Nerve of brachial plexus	Radial
06	Nerve of lumbosacral plexus	Sciatic
07	Venous trunk of the body	Caudal vena cava
08	Lymphatic vessel of the body	Thoracic duct
09	Foramen of the body	Obturator
10	Cranial nerve of the body	Trigeminal
11	Longest cranial nerve	Vagus
12	Ear ossicle	Malleus
13	Blood cell	Monocyte
14	Cell	Egg of ostrich
15	RBC (Species)	Dog
16	Ovum (Species)	Rabbit
17	Cavity of the body	Abdominal
18	Salivary gland	Parotid
	Smallest	
01	Bone of the body	Stapes
02	RBC (Species)	Goat
03	Cell	PPLO/ Mycoplasma

Characteristic cells and bodies

S. No.	Cells	Position
01	Merkel cells	Stratum basale layer of epidermis of skin
02	Langerhans cells	Stratum spinosum layer of epidermis of skin
03	Purkinje cells	Cerebellum
04	Kupffer cells	Liver

05	Dust cells	Lung
06	Heart failure cells	Lung
07	Odontoblast cells	Teeth
08	Enterochromaffin / Argentaffin	Abomasum
09	Chief cells / Peptic cells	Abomasum/Stomach
10	Oxyntic / Parietal cells	Abomasum/Stomach
11	Peg cells	Oviduct
12	Amacrine cell	Retina
13	Paneth cells	Jejunum
14	Cells of Betz	Cerebrum
15	Pyramidal cells	Cerebrum
16	Sertoli cells	Testis
17	Leydig / Interstitial cells	Testis
18	Chromaffin cells	Adrenal medulla
19	Parafollicular / C- cells	Thyroid gland
20.	Centro acinar cells	Pancreas
21	Lutein cells	Corpus luteum of ovary
22	Oxyphil cells	Parathyroid gland
23	Schwann cells	Neuron
24	Clara cells	Bronchioles
25	Prickle cells	Stratum spinosum layer of epidermis of skin
26	Melanocyte cells	Stratum basale layer of epidermis of skin
27	Pituicytes	Pars nervosa of pituitary gland
28	Pneumocyte cells	Lung alveoli
29	Littoral cells	Spleen
30	Enterocyte cells	Small intestine
31	Muller cells	Retina
	Bodies	**Position**
01	Russell bodies	Plasma cells
02	Herring bodies	Pars nervosa of pituitary gland
03	Nissl bodies	Nerve cell
05	Cell exner bodies	Ovary

06	Dohle bodies	Neutrophil
07	Odland bodies	Stratun spinosum of Epidermis

Species specific structures

S.No.	Structure	Species	Remark
01	Columella	Fowl	Ear ossicle
02	Lyssa	Dog	Fibromuscular cord on the ventral surface of tip of tongue
03	Uncinate process	Fowl	Caudal extension on the dorsal segment of 2nd to 6th ribs
04	Margoplicatus	Horse	Demarcation between non-glandular and glandular part of stomach
05	Taenia ceci	Horse	Apex of cecum
06	Taenia coli	Horse	Longitudinal ribbons of smooth muscle on outside of colon
07	Meckel diverticulum	Fowl	Remnant of yolk sac at the mid of Jejunum
08	Prepucial diverticulum	Pig	Ovoid blind pouch at the orifice of prepuce
09	Supratrochlear foramen	Dog	Communication between radial fossa and olecranon fossa of humerus
10	Foramen triosseum	Fowl	Aperture formed by fusion of scapula, coracoid and clavicle bone at pectoral girdle
11	Pygostyle	Fowl	Pointed bony projection formed by fusion of caudal coccygeal vertebrae
12	Air sacs	Fowl	Air filled membranous cavities inside the body
13	Fabella	Dog	Sesamoid bone above each condyle of femur
14	Furcula	Fowl	Formed by fusion of two clavicle bone
15	Sacculus rotundus	Rabbit	Dilated structure closed to the ileo-cecal junction
16	Saccus caecus	Horse	Rounded cul-de-sac like structure in the stomach
17	Diverticulum duodeni	Horse	Out pouching from the duodenal wall
18	Torus linguae	Ox	Raised area behind the transverse groove on the dorsal surface of tongue

Epithelium

S. No.	Epithelium	Organ
01	**Simple squamous epithelium** (Lines moist internal surfaces like serous membranes, and luminal surfaces of blood vessels)	Mesothelium (Body cavities)
		Endothelium
		Bowman's capsule
		Pulmonary alveoli
		Tympanic membrane
		Membranous labyrinth
02	**Simple columnar epithelium** (Lines luminal surface of organs that perform absorptive and secretory function)	Stomach
		Small intestine
		Large intestine
		Gall bladder
		Bulbourethral gland
		Uterus
		Uterine tube
03	**Simple cuboidal epithelium** (Lines the duct of glands)	Collecting duct of kidney
		Choroid plexus
		Ciliary body
		Follicles of thyroid gland
		Lens
04	**Pseudostratified ciliated columnar epithelium**	Trachea
		Bronchi
		Nasal mucosa
		Auditory tubes
		Paranasal sinus
05	**Pseudostratified ciliated columnar epithelium with stereocilia**	Ductus deferens (Vas deferens)
		Epididymis
06	**Transitional epithelium** (Lines hollow organs capable of distention)	Renal pelvis
		Ureter
		Urethra
		Urinary bladder
07	**Stratified squamous non keratinized epithelium**	Vagina
		Tongue
		Oesophagus
08	**Stratified squamous keratinized epithelium**	Skin

Reticulo-endothelial system or Mononuclear Phagocytic System (MPS)

S. No.	Organ	Phagocytic cell
01	Liver	Kupffer cells
02	Spleen	Sinusoidal cells
03	Tissues	Histiocytes
04	Brain	Microglia
05	Lymph nodes	Sinus histiocyte
06	Blood	Monocyte
07	Skin	Langerhans cell
08	Kidney	Intraglomerular mesengial cell
09	Lung	Dust cells or Alveolar macrophages

Germ layer

System	Ectoderm	Mesoderm	Endoderm
Nervous system	**Brain** Spinal cord **Retina** Astrocyte and Oligodendrocyte Ependyma	**Microglia**	
Digestive system	Anus Oral canal Nasal cavity **Enamel** Tongue **Parotid salivary gland**	**Spleen**	**Pancreas** Mandibular gland Sublingual gland
Integument	**Epidermis** Nail, horn and hoof Hair	Dermis	
Circulatory system		**Heart** Blood vessels Blood cells	
Glands	**Adrenal medulla** Sweat gland Mammary gland **Pituitary gland** **Pineal gland** Sebaceous gland Lacrimal gland	**Adrenal cortex**	**Thyroid** gland **Parathyroid** gland **Thymus** gland **Liver**

Sense organ	**Eye (lens, cornea, conjunctiva)** **Muscle of Iris** External ear and Internal ear		Middle ear
Others		Urinary system Genital system Muscular system Skeletal system **Uterus** **Vagina** **Kidney** **Testes and ovary**	Respiratory system

Parts of Brain

Major Division	Structures	Parts
Prosencephalon (Forebrain)	Telencephalon	Cerebrum
		Lateral Ventricle
	Diencephalon	Pituitary gland
		Pineal gland
		Thalamus
		Optic nerve
		Retina
Mesencephalon (Midbrain)		Aqueduct of sylvius
		Corpora quadrigemina
		Crura cerebri
Rhombencephalon (Hindbrain)	Metencephalon	Cerebellum
		Pons
	Myelencephalon	Medulla oblongata

Cranial nerves

Number	Nerve	Nature (Fibres)	Remark
I	Olfactory	S	
II	Optic	S	
III	Oculomotor	M	
IV	Trochlear	M	Smallest cranial nerve
V	Trigeminal	B	Largest cranial nerve
VI	Abducens	M	
VII	Facial	B	

VIII	Vestibulo – chochlear	S	
IX	Glossopharyngeal	B	
X	Vagus	B	Longest cranial nerve
XI	Spinal accessory	M	
XII	Hypoglossal	M	

(S: Sensory, M: Motor, B: Both)
(Trick: Some Say Money Matters But My Brother Say Big Brain Matters Most)

Classification of Egg

On the basis of the amount of yolk

Type of egg	Example
Alecithal Egg	Eutherian mammals (Monkey, Humans)
Microlecithal or Oligolecithal Egg	Amphioxus, Tunicates
Mesolecithal egg	Amphibian, Dipnoi (Lung fishes), Petromyzon and Annelids worm
Macrolecithal or Megalecithal or Polylecithal Egg	Insect, Shark, Bony fishes, Reptiles, Birds and Prototheria

On the basis of the distribution of yolk

Type of egg	Example
Isolecithal or Homolecithal Egg	Echinoderms, Amphioxus, Marsupials and other Mammals
Telolecithal Egg	Fishes, Amphibian, Reptilian and Avian eggs
Centrolecithal Egg	Insects and Hydrozoa

On the basis of Shell

Type of egg	Example
Cleidoic Egg	Reptiles and Birds, Prototheria mammal and Insects
Non cleidoic egg	Amphioxis, Hardmania, Frog and Mammals

On the basis of Development

Type of egg	Example
Determinate or Mosaic Egg	Polyclade, Annelids, Molluscs and Ascidians
Indeterminate or Regulative Egg	Twins in human

Derivatives of Pharyngeal arches, pouches, cleft and their associated cranial nerves

Pharyngeal arch	Arch derivatives				
	Muscles	Bone and Cartilage	Other Connective tissues	Pouch derivatives	Cleft derivatives
First (mandibular)	Muscles of mastication, mylohyoid, rostral belly of digastricus, tensor tympani, tensor veli palatini	Mandible, Maxilla, Premaxilla, Zygomatic, Auricle of ear, Malleus, Incus	Ligament of malleus, Spheno-mandibular ligament, Tympanic membrane (from first pharyngeal membrane)	Auditory tube, Guttural pouch	External auditory meatus
Second (hyoid)	Muscles of facial expression, stapedius, stylohyoid, caudal belly of digastricus	Auricle of ear, Stapes, Stylohyoid, ceratohyoid, part of basihyoid	Stylohyoid ligament	Palatine tonsils	None
Third	Stylopharyngeus	Part of basihyoid bone, Thyrohyoid cartilage	None	Parathyroids III, Stroma of thymus	None
Fourth and Sixth	Cricothyroid levator veli palatine, Constrictors of pharynx, Intrinsic muscles of larynx	Cricoid, Thyroid, Arytenoid, Corniculate and Cuneiform cartilages of larynx	None	Parathyroids IV, Stroma of thymus, Ultimobranchial bodies	None

Multiple Choice Questions

1. Based on the mode of release of secretory product sebaceous gland is classified as

a. Merocrine b. Apocrine
c. Holocrine d. Cytocrine

2. Aorta and pulmonary trunk are example of

a. Elastic arteries b. Muscular arteries
c. Arterioles d. Capillaries

3. Cisterna chyli is the reservoir of

a. RBCs
b. Mucous
c. Lymph
d. Cerebrospinal fluid

4. A groove present in the planum nasolabiale of horse is known as

a. Philtrum b. Rugae
c. Isthmus faucium d. None of the above

5. Thoracodorsal artery supplies to the

a. Teres major muscle
b. Subscapular muscle
c. Infraspinatus muscle
d. Both a and b both

6. Intercondyloid cleft is absent in the metacarpal of

a. Horse b. Ox
c. Sheep d. All of the above

7. A lip like projection present cranially to the proximal end of radius is called

a. Anconeus process
b. Acromion process
c. Coronoid process
d. Styloid process

8. Foramen located at the level of first cheek tooth on upper jaw over the maxilla bone is

a. Supraorbital foramen
b. Infraorbital foramen
c. Mental foramen
d. Mandibular foramen

9. Type of joint seen between root of teeth and alveolar socket is

a. Suture
b. Gomphosis
c. Syndesmosis
d. Diarthrodial

10. Junction between hoof and skin is called

a. Coronet b. Dew claw
c. Fetlock d. Coffin

11. Musculocutaneous branch of the brachial plexus innervates to the

a. Sub scapular muscle
b. Deltoid muscle
c. Coraco brachialis muscle
d. Teres major muscle

12. Transverse process of sixth cervical vertebrae is trifid in

a. Ox b. Horse
c. Dog d. Fowl

13. Capsule of any organ is the example of

a. Loose areolar connective tissue
b. Dense regular connective tissue
c. Dense irregular connective tissue
d. Adipose connective tissue

14. Most commonly used staining for routine histology is

a. Hematoxylin and Eosin staining
b. Giemsa staining
c. Van Gieson's staining
d. PAS staining

15. Transverse groove present on the dorsal surface of tongue in ox is called

a. Lingual fossa b. Torus linguae
c. Fraenum linguae d. Sublingual caruncle

16. Haversian system is absent in

a. Compact bone b. Cancellous bone
c. Both a and b d. None of the above

17. Fundamental functional unit of the compact bone is

a. Osteon or Haversian system
b. Osteocyte
c. Osteoblast
d. Osteoclast

18. Preservative used for fixation of the tissue is

a. 10% neutral buffered formalin
b. Formal calcium
c. Bouin's fluid
d. All of the above

19. Medial tuberosity of humerus gives attachment to the

a. Teres major muscle
b. Deltoideus muscle
c. Coracobrachialis muscle
d. Biceps brachii muscle

20. "Marrythought bone" or "Wishbone" of fowl is also known as

a. Ulna b. Scapula
c. Radius d. Furcula

21. Nasopharynx communicates with middle ear through

a. Canal of Schlemm
b. Canals of hering
c. Eustachian tube
d. Nasolacrimal canal

22. Synovial joints are characterized by

a. Articular cartilage
b. Synovial fluid
c. Joint capsule
d. All of the above

23. Erectile tissue of the penis is

a. Corpus cavernosum
b. Corpus spongiosus
c. Retractor penis
d. Corona glandis

24..... is a lymphoepithelial organ

a. Spleen
b. Thymus
c. Tonsil
d. Bursa of fabricious

25. Round ligament is found in

a. Shoulder joint b. Hip joint
c. Knee joint d. Elbow joint

26. Transverse canal which connects the Haversian canal with the marrow cavity is known as

a. Periosteum b. Endosteum
c. Haversian system d. Volkmann's canal

27. Optic papilla of eye contains

a. Blind spot b. Yellow spot
c. Iris d. Lens

28. Ganglion formed by Glossopharyngeal nerve is known as

a. Ciliary ganglion
b. Otic ganglion
c. Pterygopalatine ganglion
d. Submandibular ganglion

29. The RMC (Retromolar Canal) is absent in

a. Dog b. Cow
c. Buffalo d. Sheep

30. Reticular fibers are composed of

a. Type I collagen b. Type II collagen
c. Type III collagen d. Type IV collagen

31. The largest venous trunk of the body is

a. Posterior vena cava
b. Anterior vena cava
c. Vena hemiazygos
d. Portal vein

32. The smallest head of deep digital flexor in forelimb of ox is

a. Humeral head
b. Radial head
c. Ulnar head
d. Ulnaris lateralis

33. Extensor process is present in

a. 1st phalanx
b. 2nd phalanx
c. 3rd phalanx
d. None of the above

34. Cartilage present in the articular surfaces of the bone is

a. Hyaline b. Elastic
c. Fibrocartilage d. All of the above

35. Ventricular system is present in

a. Brain b. Heart
c. Kidneys d. Lungs

36. Olecranon process of the ulna gives attachment to the

a. Anconeus muscle
b. Triceps brachii muscle
c. Tensor fascia antibrachii muscle
d. All of the above

37. Hypophyseal fossa is present in

a. Occipital b. Sphenoid
c. Temporal d. Frontal

38. The vestige of first premolar is known as

a. Wolf tooth
b. Carnessial tooth
c. Tusk
d. None of the above

39. Dense fibrous peripheral part of the intervertebral fibro-cartilage is known as

a. Annulus fibrosus
b. Nucleus pulposus
c. Ligamentum flava
d. None of the above

40. Decrease in the angle between two bones is

a. Circumduction b. Adduction
c. Flexion d. Abduction

41. Meissner's corpuscles are associated with

a. Touch
b. Pain
c. Temperature
d. None of the above

42. The vomeronasal cartilage is

a. Elastic b. Hyaline
c. Collagenous d. Fibrous

43. Articulations in the vertebral arches and processes are known as

a. Intercentral articulation
b. Interneural articulation
c. Intercanal articulation
d. None of the above

44. Immovable joints are known as

a. Diarthrodial joints
b. Synarthrodial joints
c. Amphiarthrodial joints
d. None of the above

45. Parotid lymph node is absent in

a. Ox b. Horse
c. Dog d. Pig

46. Turbinates are highly convoluted in

a. Ox b. Goat
c. Horse d. Dog

47. Taste buds are seen in

a. Filiform papillae b. Fungiform papillae
c. Conical papillae d. Lenticular papillae

48. Movement of limb away from the median plane is called

a. Abduction b. Flexion
c. Adduction d. Extension

49. Tendon is composed of

a. Mucous connective tissue
b. Dense regular connective tissue
c. Loose irregular connective tissue
d. Dense irregular connective tissue

50. Two cerebral hemispheres are interconnected by

a. Corpus medullare
b. Corpus striatum
c. Corpus callosum
d. Corpora quadrigemina

51. Ligament is composed of

a. Mucous connective tissue
b. Dense regular connective tissue
c. Loose irregular connective tissue
d. Dense irregular connective tissue

52. Muscles of the arm region is
a. Coracobrachialis
b. Teres minor
c. Anconeus muscle
d. Deltoideus muscle

53. Corpora amylacea is associated with
a. Liver b. Pancreas
c. Lungs d. Mammary gland

54. Trochanteric ridge is vertical in the femur of
a. Horse b. Dog
c. Ox d. Pig

55. PAS staining is used to detect
a. Polysaccharides b. Mucosubstances
c. Lipids d. Both a and b

56. A depression presents at the caudal part of the floor of atlas is
a. Fovea dentis b. Fossa atlantis
c. Alar foramen d. None of the above

57. In H & E staining hematoxylin is a
a. Nuclear stain b. Cytoplasmic stain
c. Negative stain d. None of the above

58. Neuroglial cell which forms the lining of central canal is
a. Astrocytes b. Oligodendrocytes
c. Microglia d. Ependymal cells

59. Staining used to differentiate collagen fibers and smooth muscle is
a. Masson's trichrome staining
b. Verhoff's staining
c. Van Gieson's staining
d. Both a and c

60. Auditory ossicle of fowl is
a. Malleus b. Stapes
c. Incus d. Columella

61. Cresyl violet stain is used for the differentiation of
a. Nissl granules b. Glycogen
c. Goblet cells d. Collagen fibre

62. Reticular fibers are stained by
a. Masson's trichrome method
b. Verhoff's staining method
c. Van Gieson's staining
d. Silver impregnation method

63. Spatula shaped tongue is found in
a. Ox b. Horse
c. Dog d. Pig

64. Cranial nerve involved in parasympathetic system is
a. 1st b. 4th
c. 10th d. 12th

65. An encircling canal present within the sclerocorneal junction is
a. Canal of Schlemm
b. Canals of hering
c. Eustachian canal
d. Nasolacrimal canal

66. Perichondrium is absent in
a. Hyaline cartilage
b. Elastic cartilage
c. Fibro cartilage
d. None of the above

67. Space between corner incisor and first cheek tooth called as
a. Dental pad b. Diastema
c. Cingulum d. Cementum

68. Acetabulum cavity is present in
a. Pelvic girdle b. Pectoral girdle
c. Sternum d. Skull

69. Diverticulum of large mucous sacs present above pharynx of horse is known as
a. Guttural pouches b. Frontal sinus
c. Rathke's pouch d. Pharyngeal pouch

70. When bone forms from pre-existing cartilage model, the process is called
a. Intramembranous ossification
b. Intracartilaginous ossification
c. Endochondral ossification
d. Both b and c

71. Dipole is characteristic of

a. Long bone b. Short bone
c. Flat bone d. Pneumatic bone

72. Mode of secretion shown by sweat glands is

a. Apocrine b. Merocrine
c. Holocrine d. Both a and b

73. Mode of secretion shown by melanocytes is

a. Apocrine b. Merocrine
c. Cytocrine d. Holocrine

74. Cubital joint is also known as

a. Elbow joint b. Stifle joint
c. Shoulder joint d. Hock joint

75. Joint between first phalanx and second phalanx is known as

a. Fetlock b. Pastern
c. Coffin d. Metacarpal

76. The first pharyngeal pouch differentiate into

a. Thymus b. Thyroid
c. Eustachian tube d. Palatine tonsil

77. "Blood vessels of the blood vessel" are called

a. Rete mirabilis
b. Vasa vasorum
c. Sinus venosus
d. None of the above

78. Fetlock joint is found between

a. Second phalanx and third phalanx
b. First phalanx and second phalanx
c. Carpal and metacarpal
d. Metacarpal and first phalanx

79. A wedge shaped structure present between the bars of the hoof is called

a. Sole b. Frog
c. Periople d. Coronet

80. Dermis of the foot is called

a. Corium
b. Lamina
c. Frog
d. Sole

81. Dew claw in cattle represents

a. Second and fifth digits
b. Third and fourth digits
c. Only third digit
d. None of the above

82. A beak like projection present in the proximal end of ulna is known as

a. Anconeal process
b. Acromion process
c. Olecranon process
d. Styloid process

83. Shield shaped cartilage in the larynx is

a. Arytenoid b. Epiglottis
c. Cricoid d. Thyroid

84. Comma shaped nostrils are present in

a. Ox b. Horse
c. Dog d. Pig

85. Second and third fused carpal is present in

a. Horse b. Dog
c. Ox d. Pig

86. Brachial plexus is formed by

a. C_5, C_6, C_7 with T_1 and T_2
b. C_6, C_7, C_8 with T_1 and T_2
c. C_5, C_6, C_7 with T_2 and T_3
d. C_5, C_6, C_7 with T_4 and T_5

87. A flattened plate which connects apex of the sternum with furculum is called

a. Sternum b. Scapula
c. Coracoid d. Hypocleidium

88. Example of enarthrodial joint is

a. Ball and socket joint
b. Elbow
c. Capal joint
d. Suture

89. Sickle shaped fold of dura mater separating two cerebral hemispheres is

a. Tentorium cerebella
b. Falx cerebri
c. Diaphragma sellae
d. None of the above

90. The four-sided arterial network around the pituitary gland is known as
a. Rete mirabile cerebri
b. Crura cerebri
c. Falx cerebri
d. Filum terminale

91. In horse large metacarpal bone represents
a. Second metacarpal
b. Third metacarpal
c. Fourth metacarpal
d. First metacarpal

92. Distal row of carpals fuse with the metacarpal and forms a D shaped structure known as carpometacarpus in
a. Ox b. Horse
c. Fowl d. Dog

93. Extensor muscle of the forearm and manus region which inserts in metacarpal tuberosity is
a. Extensor carpi radialis
b. Extensor carpi obliquus
c. Medial digital extensor
d. Lateral digital extensor

94. Medial face of the scapular cartilage gives attachment to
a. Deltoideus
b. Serratus ventralis
c. Rhomboideus
d. Subscapular

95. Extensor process of the third phalanx gives attachment to the
a. Extensor carpi radialis
b. Common digital extensor
c. Medial digital extensor
d. Lateral digital extensor

96. An almond shaped grey complex which is considered as a part of both basal ganglia and limbic system is
a. Caudate nucleus
b. Lenticular nucleus
c. Claustrum
d. Amygdaloid body

97. Number of the cervical nerves in ox
a. 6 pairs b. 7 pairs
c. 8 pairs d. 9 pairs

98. Muscle present on the floor of thorax is
a. Transversus thoracis
b. Retractor costae
c. Scalenus
d. Longus coli

99. Bony labyrinth comprises of
a. Vestibule
b. Cochlea
c. Semicircular canal
d. All of the above

100. Components of the central nervous system (CNS) are
a. Brain and spinal cord
b. Cranial and spinal nerves
c. Sympathetic and parasympathetic nerves
d. Brain and cranial nerves

101. Artery which passes through the carpal canal is
a. Ulnar
b. Median
c. Radial
d. Common interosseous

102. A pair of tubercles is present anterior to the olecranon process in
a. Horse b. Ox
c. Dog d. Fowl

103. Largest nerve of the brachial plexus is
a. Radial nerve b. Ulnar nerve
c. Median nerve d. Axillary nerve

104. Ansa axillaris loop is formed by musculocutaneous nerve and
a. Radial nerve b. Median nerve
c. Ulnar nerve d. Axillary nerve

105. Ansa axillaris loop gives passage to the
a. Radial artery b. Median artery
c. Ulnar artery d. Axillary artery

106. Radial nerve of the brachial plexus innervates to

a. Biceps brachii muscle
b. Coraco brachialis muscle
c. Extensor group of muscle
d. All of the above

107. Archiform ligament is found in the

a. Shoulder joint b. Hock joint
c. Elbow joint d. Coffin joint

108. Coracoid process is absent in the scapula of

a. Horse b. Ox
c. Fowl d. Dog

109. Human footprint shaped spleen is present in

a. Ox b. Horse
c. Dog d. Pig

110. Coracobrachialis is the muscle of the

a. Forearm b. Shoulder
c. Neck d. Thigh

111. Area between two Z lines in striated muscle fibre is known as

a. Astrocyte b. Myocyte
c. Myofibril d. Sarcomere

112. Epithelial lining of the proximal convoluted tubules of kidney is

a. Stratified squamous epithelium
b. Simple squamous epithelium
c. Simple cuboidal epithelium
d. Simple columnar epithelium

113. Radial and intermediate carpals are fused in

a. Dog b. Ox
c. Horse d. Fowl

114. Expanded funnel shaped end of the ureter is known as

a. Renal sinus b. Renal pelvis
c. Major calices d. Minor calices

115. Poorly developed Ligamentum nuchae is seen in

a. Ox b. Horse
c. Pig d. Dog

116. "Wedge and Groove" joint is also known as

a. Sutures b. Syndesmosis
c. Schindylesis d. Gomphosis

117. A slight movable fibrous joint in which two bones are joined together by connective tissue is called

a. Synarthrosis
b. Syndesmosis
c. Synsarcosis
d. None of the above

118. Foramen Triosseum gives passage to the

a. Tendon of supracoracoideus muscle
b. Tendon of gastrocnemius muscle
c. Tendon of deep digital flexor muscle
d. Tendon of brachiocephalicus muscle

119. Foramen triosseum is present in

a. Cattle b. Canines
c. Birds d. Equines

120. Distal end of the radius possesses three obliquely directed articular facets in

a. Dog b. Horse
c. Fowl d. Ox

121. Foramen ovalis found in the

a. Frontal bone
b. Ethmoid bone
c. Sphenoid bone
d. Temporal bone

122. Only one interosseous space is present in the forearm of

a. Horse b. Dog
c. Ox d. Pig

123. Branch of the internal iliac artery is

a. Femoral artery
b. Saphenous
c. Mammary
d. Utero-ovarian artery

124. Ulnaris lateralis is innervated by

a. Radial nerve
b. Median nerve
c. Ulnar nerve
d. Axillary nerve

125. Muscle seen in the musculospiral groove of humerus is

a. Biceps brachii b. Coracobrachialis
c. Triceps brachii d. Brachialis

126. Membranous structure present at the junction between the external acoustic meatus and tympanic cavity

a. Auricle b. Conchal cartilage
c. Ear drum d. Vestibule

127. Tracheal rings are incomplete

a. Dorsally b. Ventrally
c. Medially d. Laterally

128. Nasal conchae is present in

a. Nasal bone b. Turbinate bone
c. Pterygoid bone d. Vomer bone

129. Thickest nerve of brachial plexus is

a. Radial b. Ulnar
c. Median d. Supra scapular

130. Axillary artery supply to the

a. Hind limb b. Head region
c. Neck region d. Fore limb

131. Liver of fowl consists of

a. Two lobes b. Three lobes
c. Four lobes d. Five lobes

132. Humerus resembles 'f' minus cross bar in which species

a. Pig b. Ox
c. Goat d. Dog

133. "Withers" is the characteristic feature of

a. Cervical vertebrae
b. Thoracic vertebrae
c. Lumbar vertebrae
d. Sacral vertebrae

134. The acromion process of scapula gives origin to

a. Deltoid muscle
b. Subscapular muscle
c. Biceps brachii muscle
d. Coracobrachialis muscle

135. Shaft of tibia describes a double curve in

a. Ox b. Horse
c. Dog d. Pig

136. Adductor muscle is supplied by

a. Obturator nerve
b. Femoral nerve
c. Sciatic nerve
d. Peroneal nerve

137. Anconeal process is present in

a. Radius b. Ulna
c. Humerus d. Scapula

138. In which species lateral surface of scapula is divided into two equal halves

a. Dog b. Horse
c. Ox d. Pig

139. Acromion process is rudimentary in

a. Horse b. Ox
c. Pig d. Dog

140. Superior oblique muscle of the eyeball is innervated by

a. Trigeminal nerve
b. Trochlear nerve
c. Ophthalmic nerve
d. Abducens nerve

141. Supra orbital foramen is present in

a. Frontal
b. Maxilla
c. Malar
d. Palatine

142. White fibro cartilage is seen in

a. Ear
b. Inter vertebral disc
c. Epiglottis
d. Trachea

143. Epithelia involved in diffusion, osmosis and filtration is
a. Simple squamous epithelium
b. Stratified squamous epithelium
c. Simple columnar epithelium
d. Stratified columnar epithelium

144. External opening of the mouth cavity is
a. Rima oris
b. Vestibule
c. Cavum oris
d. None of the above

145. Bicipital groove is subdivided in
a. Dog b. Ox
c. Pig d. Horse

146. The atypical cervical vertebrae is
a. First b. Third
c. Sixth d. Seventh

147. An oval yellow spot present in retina is called
a. Macula utricle
b. Macula sacculi
c. Macula lutea
d. Organ of Corti

148. Lingual tonsil is present in the tongue of
a. Pig b. Endoderm
c. Goat d. Ox

149. Inferior oblique muscle of the eyeball receive nerve supply from
a. Optic b. Trochlear
c. Oculomotor d. Abducens

150. Ligament that connects liver to the diaphragm and continuous with the triangular ligaments is
a. Falciform ligament
b. Right lateral ligament
c. Round ligament
d. Caudate ligament

151. Paired cartilage in the larynx is
a. Arytenoid b. Epiglottis
c. Cricoid d. Thyroid

152. When a bone is fitted into the groove of another bone, the joint formed is called
a. Sutures
b. Syndesmosis
c. Schindylesis
d. Gomphosis

153. Obturator foramen is formed between
a. Illium, ischium and pubis
b. Illium & pubis
c. Illium & ischium
d. Ischium & pubis

154. Leaf like cartilage in the larynx is
a. Arytenoid b. Epiglottis
c. Cricoid d. Thyroid

155. Cornual artery is the branch of
a. Occipital artery
b. External carotid artery
c. Masseteric artery
d. Superficial temporal artery

156. Levator nasolabialis helps in the
a. Dilate the nostril
b. Elevate the upper lip
c. Elevate the lower lip
d. Both a and b

157. Horn core is the modification of
a. Frontal bone b. Malar bone
c. Temporal bone d. Lacrimal bone

158. Elastic cartilage is found in
a. Epiglottis
b. Ear pinna
c. Eustachian tube
d. All of the above

159. "Cell nests" is the characteristics of
a. Hyaline cartilage
b. Elastic cartilage
c. Fibro cartilage
d. None of the above

160. Tapetum which gives metallic lustre to eye is present in
a. Cornea b. Sclera
c. Retina d. Choroid

161. Serratus ventralis thoracis muscle is supplied by

a. Long thoracic nerve
b. External thoracic nerve
c. Thoraco dorsal nerve
d. Axillary nerve

162. Superficial cervical artery is branch of

a. Subclavian artery
b. Costocervical artery
c. Internal thoracic artery
d. External thoracic artery

163. The receptor for cold is

a. Meissner's corpuscle
b. Krause's end bulb
c. Pacinian corpuscles
d. Muscle spindle

164. Smallest blunt projection on the surface of the bone is known as

a. Tuberosity b. Tubercle
c. Trochanter d. Ridge

165. Opening of oral cavity into pharynx is called

a. Isthmus faucium b. Rima oris
c. Vestibule d. Eustachian tube

166. Third ventricles communicate with the fourth ventricle through

a. Foramen of Monro
b. Foramen of Luschka
c. Aqueduct of Sylvius
d. Foramen of Magendie

167. Vascular layer of the eye is called

a. Retina b. Cornea
c. Uvea d. Sclera

168. Highest point of the skull is known as

a. Frontal crest b. Torus frontalis
c. Corunal process d. Petrous temporal

169. Root of the tongue is attached to the

a. Hyoid bone b. Sphenoid bone
c. Vomer d. Ethmoid

170. Ligamentum nuchae predominantly consists of

a. Collagen fibers b. Elastic fibers
c. Reticular fibers d. None of the above

171. Zygomatic salivary gland is present in

a. Ox b. Horse
c. Dog d. Fowl

172. Zygomatic ridge is formed by

a. Frontal and Temporal bone
b. Malar and Temporal bone
c. Malar and Mandible bone
d. Lacrimal and Frontal bone

173. Movable bone of the face is

a. Maxilla b. Mandible
c. Zygomaticus d. All of the above

174. External opening of the mandibular canal is known as

a. Mental foramen
b. Mandibular foramen
c. Hypoglossal foramen
d. Optic foramen

175. Masseteric fossa is present in

a. Mandible of ox
b. Mandible of horse
c. Mandible of dog
d. Mandible of pig

176. Lower part of the transverse process present is in the form of quadrilateral plate in

a. Axis of ox
b. 6th cervical vertebra of ox
c. 6th cervical vertebra of horse
d. 6th cervical vertebra of dog

177. Paired cranial bone is

a. Occipital b. Ethmoid
c. Sphenoid d. Temporal

178. Wharton's duct opens up at the

a. Papilla incisive
b. Hepatopancreatic ampulla
c. Opposite to 3rd molar tooth
d. Caruncula sublingualis

179. Torus linguae is the characteristic feature of the tongue of

a. Ox
b. Horse
c. Dog
d. Fowl

180. In H & E staining hematoxylin acts as a

a. Acidic dye
b. Basic dye
c. Neutral dye
d. None of the above

181. In H & E staining eosin act as a

a. Acidic dye
b. Basic dye
c. Neutral dye
d. None of the above

182. Lateral ventricles communicate with the third ventricle through

a. Foramen of Monro
b. Foramen of Luschka
c. Aqueduct of Sylvius
d. Foramen of Magendie

183. Transverse row of pointed horny papillae present in tongue of

a. Ox
b. Dog
c. Pig
d. Fowl

184. Von Ebner's glands are present in

a. Duodenum
b. Pancreas
c. Tongue
d. Rectum

185. Chief nerve innervating the extensors of fore limb is

a. Radial nerve
b. Median nerve
c. Ulnar nerve
d. Long thoracic nerve

186. Left atrioventricular opening is guarded by

a. Bicuspid valves (Mitral valves)
b. Semilunar valves
c. Tricuspid valves
d. Both a and c

187. An unpaired muscle is

a. Depressor labii maxillaris
b. Rectus abdominis
c. Diaphragm
d. Obturator externus

188. Hypophysis cerebri is separated from base of the brain by

a. Falx cerebri
b. Diaphragma sellae
c. Tentorium cerebelli
d. Brachium pontis

189. Outermost covering of the brain is

a. Piamater
b. Duramater
c. Arachnoid
d. None of the above

190. Metacromion process is present in

a. Fowl
b. Cattle
c. Dog
d. Rabbit

191. When bone forms directly from connective tissue, the process is called

a. Intramembranous ossification
b. Intracartilaginous ossification
c. Endochondral ossification
d. None of the above

192. Union of skeletal parts by means of muscles is

a. Synchondrosis
b. Symphysis
c. Synarthrosis
d. Synsarcosis

193. Extension of piamater beyond the caudal end of spinal cord is called

a. Conus medullaris
b. Coccygeal ligament
c. Filum terminale
d. Impar ganglion

194. Optical part of the retina ends in a serrated border is known as

a. Macula Lutea
b. Fovea centralis
c. Ora serrata
d. Iris

195. Nostrils are supported by

a. Alar cartilage
b. Conchal cartilage
c. Scutiform cartilage
d. Cuneiform cartilage

196. Internal ear is composed of

a. Bony labyrinth
b. Membranous labyrinth
c. Perilymph
d. All of the above

197. Third trochanter is present in
a. Humerus of ox
b. Humerus of horse
c. Femur of ox
d. Femur of horse

198. Milk vein of cattle is
a. Caudal superficial epigastric vein
b. Cranial superficial epigastric vein
c. Internal pudendal vein
d. Caudal mammary vein

199. Number of the semicircular canals in the ear is
a. 1 b. 2
c. 3 d. 4

200. Renal pelvis is absent in
a. Ox b. Horse
c. Dog d. Sheep

201. Parts of the membranous labyrinth are
a. Cochlear duct
b. Saccule and utricle
c. Three semicircular canals
d. All of the above

202. Chief refractory medium of the eyeball is
a. Aqueous humour
b. Vitreous humour
c. Lens
d. None of the above

203. Jugular groove is found between
a. Brachiocephalicus and sternocephalicus
b. Sternocephalicus and splenius
c. Sternocephalicus and sternothyrophyoideus
d. Brachiocephalicus and rhomboideus

204. Organ of hearing is
a. Saccule
b. Utricle
c. Vestibule
d. Organ of Corti

205. Aqueous humour is secreted by
a. Iris b. Ciliary body
c. Choroid d. Pupil

206. Parotid duct of ox opens opposite the
a. Lower third cheek tooth
b. Upper fifth cheek tooth
c. Lower fifth cheek tooth
d. Upper corner incisor

207. Cavity of the telencephalon is
a. Lateral ventricles
b. Aqueduct of sylvius
c. Third ventricle
d. Fourth ventricle

208. Third eyelid is situated at the
a. Medial angle of the eye
b. Lateral angle of the eye
c. Close to upper eyelid
d. Lower eyelid

209. Glandular tissue present at base of the third eyelid is
a. Harderian gland
b. Lacrimal gland
c. Molar gland
d. Tarsal gland

210. Cartilages present in the external ear is
a. Conchal cartilage
b. Scutiform cartilage
c. Annular cartilage
d. All of the above

211. Shape of the ear is formed by
a. Conchal cartilage
b. Scutiform cartilage
c. Annular cartilage
d. All of the above

212. Most widely distributed cranial nerve is
a. Trigeminal nerve
b. Vagus nerve
c. Facial nerve
d. Abducens nerve

213. Gland located on the dorsolateral aspect of orbit is
a. Lacrimal gland
b. Harder's gland
c. Mole gland
d. Preen gland

214. Tapetum is absent in
a. Cow
b. Cat
c. Horse
d. Pig

215. Oblique muscles help in the
a. Axial movement of the eyeball
b. Rotatory movement of eye
c. Lateral movement of eye
d. Medial movement of eye

216. Tapetum is a part of
a. Nervous tunic
b. Fibrous tunic
c. Vascular tunic
d. None of the above

217. Organ of hearing situated within the petrous temporal bone is
a. External ear
b. Middle ear
c. Internal ear
d. All of the above

218. Sclera is a part of
a. Fibrous coat
b. Vascular coat
c. Nervous coat
d. None of the above

219. Cariniform cartilage is present in
a. Sternum b. Ribs
c. Ear d. Scapula

220. Cornea is a part of
a. Fibrous coat b. Vascular coat
c. Nervous coat d. None of the above

221. Muscle helps in the retraction of the mouth is
a. Zygomaticus
b. Levator labii superioris proprius
c. Incisivus superior
d. All of the above

222. Glands present in the eyelids are
a. Harderian glands
b. Lacrimal glands
c. Meibomian glands
d. All of the above

223. Hardest bone of the body is
a. Basioccipital
b. Petrous temporal
c. Basisphenoid
d. Squamous temporal

224. Papillae present in ruminants on the dorsum linguae and prevent food from gliding off the tongue is called
a. Filiform papillae
b. Lenticular papillae
c. Conical papillae
d. Fungiform papillae

225. Largest paranasal sinus of horse is
a. Frontal b. Conchal
c. Sphenopalatine d. Maxillary

226. Bone forming the partition between cranial and nasal cavities
a. Frontal b. Sphenoid
c. Sphenoidal d. Ethmoid

227. Atlanto axial joint is an example of
a. Trochoid
b. Gomphosis
c. Hinge joint
d. None of the above

228. Angular process of mandible is seen in
a. Ox b. Pig
c. Horse d. Dog

229. Viborg's triangle is the site for access of
a. Parotid salivary gland
b. Mandibulary nerve block
c. Paracentesis thoracis
d. Guttural pouches

230. Musculo cartilagenous compartment between trachea and pharynx is
a. Pharynx b. Lips
c. Tongue d. Larynx

231. Largest cartilage of the larynx is
a. Arytenoid b. Cricoid
c. Thyroid d. Epiglottis

232. In dog, the infraorbital foramen is located

a. Opposite to upper 5th check tooth
b. Opposite to upper 3rd check tooth
c. Opposite to lower 5th check tooth
d. Opposite to lower 3rd check tooth

233. In horses, Galveyn's groove appears on

a. Upper third incisor
b. Upper first check tooth
c. Lower third incisor
d. Lower first check tooth

234. Cingulum is found in

a. Ox b. Horse
c. Dog d. Pig

235. Lamina fusca is a part of

a. Sclera b. Cornea
c. Choroid d. Retina

236. Openings present in pharynx are

a. 4 b. 5
c. 6 d. 7

237. Median groove presents on the dorsal surface of tongue in

a. Ox b. Horse
c. Dog d. Pig

238. Peg teeth are characteristic of

a. Rabbit b. Goat
c. Horse d. Dog

239. Condensation of piamater along the sides of spinal cord is called

a. Lamina splendens b. Dentate ligament
c. Filum terminale d. Cauda equina

240. Largest commissure of cerebral hemisphere is

a. Corpus callosum
b. Anterior commissure
c. Posterior commissure
d. Hippocampal commissure

241. Floor of the pelvic cavity is formed by

a. Pubis and Ischium
b. Ilium and Ischium
c. Ilium and Pubis
d. None of the above

242. Soft palate is well developed and long in

a. Ox b. Horse
c. Pig d. Dog

243. Continuation of the femoral artery is

a. Saphenous artery
b. Tibial artery
c. Pudendal artery
d. Popliteal artery

244. Costal groove is present in

a. Ribs b. Sternum
c. Vertebrae d. All of the above

245. Posterior uterine artery is arises from

a. Abdominal aorta
b. Internal iliac artery
c. External iliac artery
d. Internal pudendal artery

246. White of the eye is formed by

a. Sclera b. Choroid
c. Ciliary body d. Iris

247. Duct of mandibular salivary gland is called

a. Stenson's duct
b. Wharton's duct
c. Duct of stantorini
d. Duct of wirsung

248. Foramen of exit of mandibular nerve in ox is

a. Hypoglossal Foramen
b. Jugular Foramen
c. Foramen Orbitorotundum
d. Foramen Ovale

249. Foramen of exit of glossopharyngeal nerve in ox is

a. Hypoglossal Foramen
b. Jugular Foramen
c. Foramen Orbitorotundum
d. Foramen Ovale

250. Largest salivary gland in horse is

a. Parotid b. Mandibular
c. Lingual d. Zygomatic

251.Roaring in horses is due to paralysis of

a. Cranial laryngeal nerve
b. Recurrent laryngeal nerve
c. Facial nerve
d. Maxillary nerve

252. Triangular area of the mucous membrane on the dorsal wall of urinary bladder is called

a. Body b. Neck
c. Vertex d. Trigone

253.Innermost layer and nervous tunic of eyeball is

a. Sclera b. Retina
c. Choroid d. Lens

254.Floor of fourth ventricle is formed by

a. Medulla oblongata
b. Cerebellum
c. Thalamus
d. Fornix

255.Parotid of horse pierces the cheek opposite to the

a. Upper fourth cheek tooth
b. Upper fifth cheek tooth
c. Upper second cheek tooth
d. Upper cheek tooth

256.Motor nerve supply to the tongue is by

a. Glossopharygeal b. Vagus
c. Spinal accessory d. Hypoglossal

257.External ear and middle ear is separated by

a. Tympanic membrane
b. Bony labyrinth
c. Membranous labyrinth
d. None of the above

258.Preferred site for collection of CSF in dog is

a. Cisterna magna
b. Lumbar cistern
c. Cisterna pontis
d. Cisterna chiasmatis

259.Canine fossa is found in

a. Ox b. Horse
c. Pig d. Dog

260.Largest sensory nucleus of the brain is

a. Red nucleus b. Thalamus
c. Substantia nigra d. Dog

261.In which species glenoid notch is absent in scapula

a. Pig b. Horse
c. Dog d. Ox

262.Largest lymphatic vessel of the body is

a. Tracheal lymph duct
b. Right lymphatic duct
c. Thoracic duct
d. Visceral trunk

263.Eustachian tube connects pharynx with

a. External ear b. Middle ear
c. Internal ear d. Cranial cavity

264.Bronchioles are lined by

a. Simple squamous epithelium
b. Simple cuboidal epithelium
c. Pseudostratified columnar epithelium
d. Transitional epithelium

265.Comma shaped caecum is found in

a. Ox b. Horse
c. Pig d. Dog

266.Single occipital condyle is present in

a. Fowl b. Dog
c. Pig d. Horse

267.Paired branch of abdominal aorta is

a. Coeliac
b. Cranial mesenteric
c. Testicular
d. Caudal mesenteric

268.Sphincter muscle situated around the eye is

a. Orbicularis oculi b. Malaris
c. Zygomaticus d. Orbicularis oris

269.Artery arises from the subscapular artery is

a. Suprascapular b. External thoracic
c. Thoracodorsal d. Median

270. Interlobular connective tissue is well developed in the liver of

a. Ox b. Horse
c. Pig d. Dog

271. Retractor oculi muscle of the eye is innervated by the

a. Trigeminal nerve
b. Trochlear nerve
c. Ophthalmic nerve
d. Abducens nerve

272. Lateral rectus muscle of the eye is innervated by

a. Trigeminal nerve
b. Abducens nerve
c. Trochlear nerve
d. Ophthalmic nerve

273. Sacculus rotundus is present in the intestine of

a. Dog b. Rabbit
c. Horse d. Pig

274. 'J' shaped stomach is present in

a. Ox b. Horse
c. Dog d. Fowl

275. A small triangular structure between the dental pads and the first transverse ridge of the hard palate is

a. Papilla salivalis b. Papilla incisive
c. Rugae d. Vestibule

276. An example of projection fibres is

a. Corpus callosum
b. Cingulum
c. Corticospinal tract
d. None of the above

277. V shaped pancreas is present in

a. Ox b. Horse
c. Dog d. Pig

278. Point of insertion for the biceps brachii muscle is

a. Teres tubercle b. Radial tuberosity
c. Deltoid tuberosity d. Tuber scapulae

279. "Vertebra prominens" is also known as

a. Third cervical
b. Atlas vertebra
c. Seventh cervical
d. Thoracic vertebrae

280. Brush border epithelial surface is found in

a. Proximal convoluted tubule
b. Distal convoluted tubule
c. Loop of Henle
d. Collecting tube

281. Tuber spine of scapula gives attachment to the

a. Trapezius muscle
b. Latissimus dorsi muscle
c. Supraspinatus muscle
d. Subscapular muscle

282. Left lateral ligament is present in the liver of

a. Dog b. Horse
c. Pig d. Ox

283. Foramen magnum is present in

a. Occipital bone b. Parietal
c. Temporal d. Frontal

284. Sphincter muscle of the mouth is

a. Orbicularis oculi
b. Levator nasolabialis
c. Zygomaticus
d. Orbicularis oris

285. Largest compartments of stomach in newborn calves is

a. Rumen
b. Reticulum
c. Omasum
d. Abomasum

286. An elongated swelling on the visceral surface of rumen is called

a. Insula ruminis
b. Atrium ventriculi
c. Blind sac
d. None of the above

287.Guttural pouches are present in the pharynx of

a. Ox
b. Horse
c. Dog
d. Pig

288.Lingual artery is the branch of

a. External maxillary artery
b. Internal maxillary artery
c. External carotid artery
d. Internal carotid artery

289.Intercellular junction which prevent leakage of material from the lumen is

a. Zonula occludens
b. Zonula adherens
c. Macula adherens
d. Nexus or Gap junction

290.Organ of Jacobson is present in

a. Nasal cavity
b. Mouth
c. Tongue
d. Eye

291.Hypoglossal foramen is found in

a. Frontal bone
b. Occipital bone
c. Temporal bone
d. Ethmoid bone

292.Ligamentum nuchae is present in

a. Back
b. Neck
c. Loin
d. Tail

293.Foramen incisium is present on

a. Soft palate
b. Hard palate
c. Tongue
d. Lip

294.Star shaped supportive cells in the central nervous system are called

a. Astrocytes
b. Oligodendroglia
c. Microglia
d. Nissl bodies

295.Process of axis articulates with the fovea dentis of atlas is

a. Acromian process
b. Odontoid process
c. Olecranon process
d. None of the above

296.Lingual papilla without taste buds is

a. Fungiform
b. Lenticular
c. Foliate
d. Vallate

297.Schwann cells are found associated with

a. Neurons
b. Cardiac fibers
c. Skeletal fibers
d. None of the above

298.The rectum is completely covered by the peritoneum in

a. Ox
b. Horse
c. Dog
d. Fowl

299.Blind terminal end of caecum in rabbit is known as

a. Ansa spiralis
b. Ansa sigmoidea
c. Vermiform appendix
d. Meckel's diverticulum

300.Cribriform plate is the feature of

a. Ethmoid bone
b. Sphenoid bone
c. Occipital bone
d. Frontal bone

301.Largest bone in the facial group is

a. Maxillae
b. Mandible
c. Zygomaticus
d. Frontal

302.Alar foramen is present in

a. Sacrum
b. Atlas
c. Lumbar vertebrae
d. Thoracic vertebrae

303.Largest sinus present in horse is

a. Frontal
b. Maxillary
c. Palatine
d. Sphenoid

304.Muscle of the mastication is

a. Digastricus
b. Masseter
c. Temporalis
d. All of the above

305.Upper lip is innervated by

a. Infra orbital nerve
b. Mental nerve
c. Mandibular nerve
d. Supra orbital nerve

306. Signet ring shaped laryngeal cartilage is

a. Arytenoid b. Cricoid
c. Thyroid d. Epiglottis

307. Number of proximal sesamoid bone in one forelimb of ox is

a. 2 b. 4
c. 6 d. 8

308. Position of right kidney is

a. 11th to 13 rib
b. 1st to 3rd lumbar vertebrae
c. 3rd to 5th lumbar vertebrae
d. Pelvic cavity

309. The movable articulations in the skull are

a. Temporo-mandibular articulation
b. Hyoidean articulation
c. Both a and b
d. None of the above

310. Crescentric fold of duramater between the cerebrum and cerebellum is known as

a. Falx cerebri
b. Tentorium cerebella
c. Diaphragm sellae
d. Corpus callosum

311. Roof of the cavum oris is formed by

a. Teeth b. Hard palate
c. Soft palate d. Uvula

312. Scapula of fowl is

a. Sword shaped
b. Pin shaped
c. Triangular
d. Human footprint shaped

313. Ulna is massive than radius in

a. Pig
b. Fowl
c. Horse
d. Both a and b

314. Nature of secretion of parotid salivary gland in domestic animals is predominantly

a. Mucus b. Serous
c. Seromucus d. Mixed

315. Process present in the ramus of the mandible is

a. Condylar process
b. Coronoid process
c. Zygomatic process
d. Both a and b

316. Neuroepithelial areas seen in the semicircular canals are

a. Organ of Corti
b. Crista ampullaris
c. Macula utriculi
d. Macula sacculi

317. Orbital rim is incomplete in the skull of

a. Ox b. Horse
c. Dog and Pig d. Fowl

318. Corniculate process is associated with

a. Thyroid cartilage
b. Cricoid cartilage
c. Epiglottis
d. Arytenoid cartilage

319. Total number of ribs in horses is

a. 13 pairs b. 14 pairs
c. 18 pairs d. 7 pairs

320. Subsinuosal groove seen on which surface of the heart

a. Left b. Right
c. Anterior d. Posterior

321. The caudal 1/3rd of the tongue is innervated by

a. Glassopharyngeal nerve
b. Trochlear
c. Vagus
d. Optic

322. An unpaired branch of abdominal aorta is

a. Renal artery
b. Internal iliac artery
c. Coeliac artery
d. External iliac artery

323. Number of papillary muscles present in the right ventricle of ox is

a. 2 b. 3
c. 4 d. 5

324.Facial muscle which located between the maxilla and mandible is

a. Buccinator
b. Levator labii superioris
c. Orbicularis oris
d. Zygomaticus

325.Apical bronchus is present in

a. Horse
b. Ox and Pig
c. Dog
d. Fowl

326.Two anterior vena cava are seen in

a. Dog
b. Cow
c. Fowl
d. Horse

327.Number of ribs present in fowl is

a. 18 pairs
b. 13 pairs
c. 7 pairs
d. 14 pairs

328.Right atrioventricular opening is guarded by

a. Bicuspid valves
b. Tricuspid valves
c. Semilunar valves
d. Mitral valves

329.An unpaired air sac of fowl is

a. Clavicular
b. Cervical
c. Anterior thoracic
d. Abdominal

330.Second and third fused tarsal is present in

a. Ox
b. Horse
c. Dog
d. Pig

331.The thirteenth pair of ribs is floating in

a. Sheep
b. Dog
c. Horse
d. Fowl

332.The characteristics of cardiac muscle fibers are

a. Striated voluntary and have intercalated discs
b. Non-Striated voluntary and have intercalated discs
c. Striated involuntary and have intercalated discs
d. Striated involuntary and do not have intercalated discs

333.Largest venous trunk of the body is

a. Cranial vena cava
b. Caudal vena cava
c. Jugular vein
d. Pulmonary vein

334.Heart is innervated by

a. Trigeminal nerve
b. Trochlear nerve
c. Vagus nerve
d. Hypoglossal nerve

335.Number of the functional digits in cattle is

a. 1
b. 2
c. 3
d. 4

336.Pituitary gland is located in

a. Dorsum sellae
b. Lacrimal fossa
c. Sella turcica
d. Ethmodial fossa

337.Number of the functional digits in equines is

a. 1
b. 2
c. 3
d. 4

338.Location of the heart in the thoracic cavity is

a. Between 3rd to 6th rib
b. Between 2nd to 5th rib
c. Between 2nd to 6th rib
d. Between 3rd to 8th rib

339.Functional blood supply to the lungs is by

a. Bronchial artery
b. Pulmonary artery
c. Laryngeal artery
d. None of the above

340.Nutritional blood supply to the lungs is by

a. Bronchial artery
b. Pulmonary artery
c. Laryngeal artery
d. None of the above

341.First branch of aorta is

a. Brachiocephalic trunk
b. Common carotid artery
c. Pulmonary artery
d. Coronary artery

342. Conus arteriosus is found in
a. Right atrium
b. Left atrium
c. Right ventricle
d. Left ventricle

343. Space between two plural sacs is known as
a. Pleura
b. Cupula
c. Mediastinum
d. None of the above

344. "Herring bodies" are seen in
a. Cerebrum b. Cerebellum
c. Heart d. Pituitary

345. Boat shaped sternum is present in
a. Ox b. Sheep
c. Horse d. Pig

346. Mammillary process is present in the
a. Cervical vertebrae
b. Thoracic vertebrae
c. Lumbar vertebrae
d. Sacral vertebrae

347. Special ependymal cells found in the third ventricle of the brain are called
a. Hepatocytes
b. Pancreatic acinar cells
c. Tanycytes
d. Ependyma

348. Caudal extremity of the sternum is formed by
a. Manubrium
b. Xiphoid cartilage
c. Rostrum
d. Crest

349. Cranial projection of sternum in fowl is known as
a. Rostrum b. Keel
c. Craina d. Crest

350. Molar salivary gland is present in
a. Horse b. Cattle
c. Dog d. Cat

351. Plate like bone at the ventral side of the sternum in fowl is known as
a. Rostrum
b. Metasternum
c. Keel
d. None of the above

352. Pygostyle of fowl is formed by fusion of
a. Last three sacral vertebrae
b. Initial three coccygeal vertebrae
c. Last two coccygeal vertebrae
d. Last three coccygeal vertebrae

353. Sternum of pig consists of
a. 7 segments b. 8 segments
c. 9 segments d. 6 segments

354. Pectinate muscle found in the wall of
a. Atrium b. Ventricle
c. Aorta d. Pulmonary vein

355. Purkinje fibers are present in the wall of
a. Atrium
b. Ventricle
c. Epicardium
d. None of the above

356. Oyster shell shaped spleen is characteristic of
a. Dog b. Cattle
c. Goat d. Horse

357. First sternal segment is formed by
a. Manubrium
b. Costal cartilage
c. Xiphoid cartilage
d. None of the above

358. Unpaired cranial bone is
a. Frontal b. Temporal
c. Occipital d. Parietal

359. Horses can sleep while standing because of
a. Suspensory ligament
b. Pubo-femoral ligament
c. Stay apparatus
d. All of the above

360. Menisci is seen between

a. Femur and Tibia bone
b. Tibia and Fibula
c. Tibia and Tarsals
d. All of the above

361. Papillary muscle is the characteristics of

a. Atrium
b. Ventricle
c. Aorta
d. Pulmonary vein

362. Opening of pulmonary artery and aorta is guarded by

a. Tricuspid valve
b. Mitral valve
c. Bicuspid valve
d. Semilunar valves

363. Apex of the heart is placed between the lobes of liver in

a. Dog
b. Ox
c. Fowl
d. Horse

364. Space between dura mater and arachnoid is called

a. Epidural
b. Subdural
c. Subarachnoid
d. Cisterna magna

365. In fowl uncinate process extends from the

a. 1st rib to 2nd rib
b. 2nd to 6th rib
c. 3rd to 7th rib
d. Present in all ribs

366. Largest lobe of the lung is

a. Apical
b. Cardiac
c. Diaphragmatic
d. Intermediate

367. Os phrenic is present in

a. Nose
b. Penis
c. Heart
d. Diaphragm

368. Cariniform cartilage is found in

a. Ox
b. Fowl
c. Dog
d. Horse

369. Most voluminous part of intestine in horse is

a. Duodenum
b. Jejunum
c. Caecum
d. Rectum

370. Secondary lymphoid organs includes

a. Spleen and tonsil
b. Lymph nodes and haemal nodes
c. MALT, BALT, GALT
d. All of the above

371. Zymogen granules are found in

a. Hepatocytes
b. Pancreatic acinar cells
c. Tanycytes
d. Ependyma

372. Os phrenic is found in

a. Cattle
b. Horse
c. Dog
d. Camel

373. Capitular facet is present in

a. Cervical vertebrae
b. Thoracic vertebrae
c. Lumbar vertebrae
d. Sacral vertebrae

374. The bicipital groove of humerus gives passage to the tendon of

a. Biceps brachii muscle
b. Triceps muscle
c. Brachialis muscle
d. Anconeus muscle

375. Supratrochlear foramen is a characteristic feature of humerus of

a. Ox
b. Fowl
c. Horse
d. Dog

376. The prepubic tendon refers to the insertion of

a. Creamaster muscle
b. Rectus abdominis muscle
c. Abdominis internus muscle
d. Transverse abdominis muscle

377. Fold of mucous membrane which connects floor of the mouth and ventral surface of the tongue is known as

a. Torus linguae
b. Dorsum linguae
c. Fraenum linguae
d. None of the above

378. A sieve like area at the opening of renal papillary duct is called

a. Renal crest b. Hilus
c. Area cribrosa d. Pelvis

379. Dental pad is found in

a. Ox b. Horse
c. Pig d. Dog

380. Cartilage of the ear present in form of a small incomplete ring is

a. Conchal cartilage
b. Scutiform cartilage
c. Annular cartilage
d. All of the above

381. The direction of the muscle fibres in obliquus abdominis externus is

a. Forward and downward
b. Downward and backward
c. Parallel to the vertebral column
d. Forward and upward

382. Rods and cones are present in

a. Sclera b. Cornea
c. Iris d. Retina

383. The right gastric artery in ruminants is a branch of

a. Hepatic artery
b. Right ruminal artery
c. Left ruminal artery
d. Omasoabomasal artery

384. The direction of the muscle fibres in obliquus abdominis internus is

a. Forward and downward
b. Backward and downward
c. Parallel to the vertebral column
d. Forward and upward

385. Double fold of peritoneum extending from liver to the parietal surface of the omasum is called

a. Ligament b. Lesser omentum
c. Greater omentum d. Pleura

386. Wolf tooth is found in

a. Ox b. Horse
c. Dog d. Pig

387. Weigert's Resorcin-Fuchsin stain is used for

a. Collagen fibres b. Elastic fibres
c. Reticular fibres d. None of the above

388. Verhoeff's staining is used for the

a. Collagen fibres
b. Elastic fibres
c. Reticular fibres
d. None of the above

389. Transparent membrane of the eyeball is

a. Sclera b. Cornea
c. Choroid d. Iris

390. Saccus cecus in equine is related to the

a. Liver b. Abomasum
c. Caecum d. Colon

391. Anvil shaped bone of the ear is

a. Malleus b. Incus
c. Stapes d. All of the above

392. A thin metachromatic layer found around the tubules of dentine with higher degree of calcification is

a. Interglobular spaces of Owen
b. Sheath of Neumann
c. Tomes granular layer
d. Space of Disse

393. Vitreous chamber of the eye is located between

a. Cornea and iris
b. Iris and Vitreous body
c. Lens and retina
d. Cornea and retina

394.Saccus cecus is a rounded cul-de-sac present in the

a. Caecum of horse
b. Caecum of ox
c. Stomach of horse
d. Stomach of dog

395.Unilobar unipyramidal kidney is found in

a. Ox
b. Fowl
c. Pig
d. Dog

396.Liver of dog consists of

a. 4 lobes
b. 6 lobes
c. 5 lobes
d. 2 lobes

397.Diverticulum duodeni is present in

a. Pig
b. Cattle
c. Dog
d. Horse

398.Poupart's ligament is the ligament of

a. Obliquus abdominis externus
b. Obliquus abdominis internus
c. Rectus abdominis
d. Transverse abdominis

399.Muscularis mucosa is absent in

a. Rumen
b. Abomasum
c. Reticulum
d. Omasum

400.Renal impression is absent in the liver of

a. Dog
b. Cattle
c. Horse
d. Pig

401.Space between tympanic membrane and internal ear within the petrous temporal bone is

a. Tympanic cavity
b. Tympanic membrane
c. External ear
d. Internal ear

402.Hammer shaped bone of the ear

a. Malleus
b. Incus
c. Stapes
d. All of the above

403.Bronchioles are characterized by

a. C shaped cartilage
b. Ring shaped cartilage
c. Absence of cartilage
d. Presence of bony ring

404.Stifle joint includes

a. Femoro-tibial articulation
b. Femoro-patellar articulation
c. Menisci
d. All of the above

405.Scythe shaped spleen is found in

a. Horse
b. Ox
c. Pig
d. Dog

406.Papillary process is absent in the liver of

a. Goat
b. Ox
c. Pig
d. Dog

407.Pseudo lobulated kidney is seen in

a. Cattle
b. Dog
c. Horse
d. Pig

408.Stomach is fully glandular in

a. Ox
b. Horse
c. Pig
d. Dog

409.Dispersed state of chromatin in the ultrastructure of any cell is called

a. Euchromatin
b. Heterochromatin
c. Pseudochromatin
d. None of the above

410.Maximum number of goblet cells is found in

a. Duodenum
b. Rectum
c. Ileum
d. Jejunum

411.Cells of Betz present in

a. Cerebrum
b. Cerebellum
c. Pons
d. Medulla oblongata

412.Globular spleen is present in

a. Ox
b. Horse
c. Pig
d. Fowl

413. Cardiac impression on the liver is seen in

a. Ox b. Horse
c. Rabbit d. Fowl

414. Lining epithelium of the vagina is

a. Stratified columnar
b. Pseudostratified columnar
c. Stratified squamous keratinized
d. Stratified squamous non keratinized

415. Storage spleen is found in

a. Ox b. Dog
c. Pig d. Rabbit

416. Torus pyloricus is found in the stomach of

a. Horse b. Dog
c. Pig d. Ox

417. In fowl muscular stomach is known as

a. Proventriculus
b. Gizzard
c. Isthmus
d. None of the above

418. Honey comb like structure is present in

a. Rumen b. Reticulum
c. Omasum d. Abomasum

419. Cavity of the membranous labyrinth is filled with

a. Endolymph b. Perilymph
c. Haemolymph d. Chylous fluid

420. Crescent shaped folds or laminae are seen in the interior of

a. Rumen b. Reticulum
c. Omasum d. Abomasum

421. Fold of peritoneum attached to the stomach is

a. Mesothelium b. Mesentery
c. Ligament d. Omentum

422. Elongated sac like structure which act as a reservoir of lymph is

a. Right lymphatic duct
b. Cisterna chyli
c. Thoracic duct
d. None of the above

423. Periarteriolar lymphatic sheath (PALS) surrounds central arteries of

a. Lungs b. Heart
c. Liver d. Spleen

424. Taenia ceci and Taenia coli are found in

a. Ox b. Horse
c. Pig d. Dog

425. Polygonal cells are present in the interior of

a. Rumen b. Reticulum
c. Omasum d. Abomasum

426. Ampula of Vater is present in the intestine of

a. Ox b. Dog
c. Horse d. Fowl

427. Peyer's patches are located in the

a. Serosa of ileum
b. Muscularis of ileum
c. Submucosa of ileum
d. Mucosa of ileum

428. Peptic cells are also known as

a. Chief cells
b. Parietal cells
c. Argentaffin cells
d. All of the above

429. Cardiac notch is present in

a. Left lung
b. Right lung
c. Both
d. None of the above

430. Meckel's diverticulum is present in the digestive system of

a. Dog
b. Horse
c. Fowl
d. Ox

431. Sharpey's fibres of the periodontal membrane are mainly

a. Collagen fibres
b. Elastic fibres
c. Reticular fibres
d. All of the above

432.Portal triad is consist of

a. Bile duct, hepatic artery and portal vein
b. Hepatic Vein, hepatic artery and portal vein
c. Central Vein, hepatic artery and portal vein
d. Portal artery, hepatic artery and portal vein

433.Spleen is situated at the junction between proventriculus and gizzard in

a. Ox
b. Horse
c. Dog
d. Fowl

434.Turkish towel like papillae are seen in the interior of

a. Rumen
b. Reticulum
c. Omasum
d. Abomasum

435.Ring shaped papillae are

a. Filiform
b. Fungiform
c. Foliate
d. Vallate

436.Glial cell that lays myelin sheath in CNS is

a. Neurolemma
b. Astrocyte
c. Oligodendrocyte
d. Microglia

437.Paired caeca is found in

a. Dog
b. Horse
c. Fowl
d. Ox

438.Ampula of Vater is located at

a. Duodenum
b. Jejunum
c. Ileum
d. Caecum

439.Anterior chamber of the eye is located between

a. Cornea and iris
b. Iris and Vitreous body
c. Lens and retina
d. Cornea and retina

440.The transverse process is large and flattened dorsoventrally in

a. Thoracic vertebrae
b. Coccygeal vertebrae
c. Cervical vertebrae
d. Lumbar vertebrae

441.Apex of the pleural sac is known as

a. Aditus
b. Appendix
c. Cupula
d. Crura

442.Sternum of dog is composed of

a. 7 segments
b. 8 segments
c. 9 segments
d. None of the above

443.Lateral malleolus is present in

a. Distal extremity of Radius
b. Proximal extremity of ulna
c. Distal extremity of fibula
d. Distal extremity of tibia

444.In the cock, spur core is seen on

a. Tibiotarsus
b. Humerus
c. Tarsometatarsus
d. None of the above

445.Study of structure of an organ in a particular region of the body is known as

a. Topographic Anatomy
b. Applied Anatomy
c. Functional Anatomy
d. Surface Anatomy

446.Meckel's diverticulum is found in

a. Duodenum
b. Jejunum
c. Ileum
d. Caecum

447.Meckel's diverticulum is the remnant of

a. Allantois
b. Amnion
c. Chorion
d. Yolk sac

448.Recti muscles help in the

a. Axial movement of the eye
b. Rotatory movement of eye
c. Lateral movement of eye
d. Medial movement of eye

449.Foramen of Winslow is also known as

a. Epiploic foramen
b. Foramen ovale
c. Alar Foramen
d. Mental Foramen

450. Pharyngeal diverticulum is present in

a. Cow b. Mare
c. Sow d. Bitch

451. Caecal tonsils are peculiarity of

a. Fowl b. Horse
c. Dog d. Pig

452. Calices majora is present in the kidneys of

a. Dog b. Horse
c. Ox d. Fowl

453. "M cells" of intestine are a part of

a. MALT b. BALT
c. GALT d. Tonsils

454. Nutritional blood supply of liver is by

a. Portal vein
b. Portal artery
c. Hepatic artery
d. Hepatic vein

455. Esophagus of the carnivores is lined by

a. Keratinized stratified squamous epithelium
b. Non keratinized stratified squamous epithelium
c. Stratified columnar epithelium
d. Pseudo stratified columnar epithelium

456. In which side of the abdominal cavity spleen is situated

a. Right side b. Left side
c. Middle d. Laterally

457. Hassall's corpuscles are found in

a. Thymus b. Tonsils
c. Haemal nodes d. Spleen

458. Acervuli are seen in

a. Pineal gland b. Cerebellum
c. Cerebrum d. Pituitary

459. Coronary grooves are present in

a. Lungs b. Heart
c. Rumen d. Liver

460. Extension of spinal cord from the conus medullaris to the first coccygeal vertebra is called

a. Conus medullaris
b. Filum terminale
c. Cauda equine
d. Linea splendens

461. "Heart shaped" right kidney is found in

a. Ox b. Dog
c. Pig d. Horse

462. Coronary ligament is present in

a. Heart b. Lung
c. Liver d. Spleen

463. White fibrous raphe extends from the xiphoid cartilage to pubic symphysis is

a. Linea alba b. Prepubic tendon
c. Peritoneum d. Diaphragm

464. Ligament attaches caudate lobe of liver to the right kidney is

a. Round ligament
b. Right lateral ligament
c. Falciform ligament
d. Caudate ligament

465. Glandular stomach of fowl is

a. Proventriculus b. Gizzard
c. Crop d. Oesophagus

466. In dogs gall bladder is situated at

a. Left lateral lobe
b. Left central lobe
c. Right lateral lobe
d. Right central lobe

467. Single renal papilla is present in

a. Ox b. Horse
c. Dog d. Both b and c

468. Muscle extends along the floor of the abdominal cavity is

a. Obliquus abdominis externus
b. Obliquus abdominis internus
c. Transverse abdominis
d. Rectus abdominis

469.Milk vein in cow is also known as

a. Subcutaneous abdominal vein
b. External iliac vein
c. Hepatic vein
d. Superior mesenteric vein

470.Socks shaped spleen is found in

a. Ox b. Horse
c. Fowl d. Dog

471.The arrangement of centripetal and centrifugal coils of colon of ox is called

a. Ansa spiralis
b. Ansa sigmoidea
c. Both a and b
d. None of the above

472.Opening of colon into the cloaca of fowl is known as

a. Proctodeum b. Coprodeum
c. Urodeum d. None of the above

473.The S-shaped curve of the proximal duodenum is known as

a. Ansa proximalis b. Ansa spiralis
c. Ansa sigmoidea d. Ansa distalis

474.Phagocytic cells of the nervous system are

a. Schwann cell b. Oligodendroglia
c. Amphicyte d. Microglia

475.Vascular tunic of the eyeball includes

a. Choroid
b. Ciliary body
c. Iris
d. All of the above

476.Saphenous nerve is a branch of

a. Sciatic b. Obturator
c. Anterior gluteal d. Femoral

477.Foramen transversarium is absent in

a. Horse b. Dog
c. Ox d. Pig

478.Lesser sciatic notch is absent in

a. Ox b. Horse
c. Dog d. Pig

479.Fibula extends the whole length of the tibia in

a. Ox b. Fowl
c. Dog d. Horse

480.Fabella is found in

a. Dog b. Horse
c. Ox d. Fowl

481.Side kick in horse is restricted by

a. Round ligament
b. Pubo-femoral ligament
c. Sesamoidean ligament
d. Cruciate ligament

482.Sacrum of dog is formed by the fusion of

a. 7 vertebrae b. 6 vertebrae
c. 5 vertebrae d. 3 vertebrae

483.Tibial tuberosity is grooved in

a. Horse b. Ox
c. Dog d. Pig

484.Lateral small metatarsal of horse refers to the

a. Second metatarsal b. Third metatarsal
c. Fourth metatarsal d. Fifth metatarsal

485.Cranial crest is a part of

a. Tibiotarsus b. Tarsometatarsus
c. Humerus d. Femur

486.Pulmonary surfactant is secretory product of

a. Type-I Pneumocytes
b. Type-II Pneumocytes
c. Pulmonary Macrophages
d. Membranous Pneumocytes

487.Apex of the heart is formed by

a. Right atrium
b. Left atrium
c. Right ventricle
d. Left ventricle

488.Hamulus is the feature of

a. Nasal bone b. Turbinate bone
c. Pterygoid bone d. Vomer bone

489. Cornual process is absent in

a. Ox b. Horse
c. Goat d. Sheep

490. Largest flat bone of the body is

a. Os coxae b. Scapula
c. Frontal bone d. Mandible

491. Quadriceps femoris is supplied by

a. Obturator nerve b. Femoral nerve
c. Tibial nerve d. Fibular nerve

492. Longest bone of the fowl is

a. Femur b. Tarsometatarsus
c. Tibiotarsus d. Fibula

493. Pubo-femoral ligament is absent in

a. Ox b. Horse
c. Dog d. Pig

494. Artery that supplies to the infraspinatus muscle is

a. Subscapular artery
b. Thoracodorsal artery
c. Suprascapular artery
d. None of the above

495. Sacral spines are fused in

a. Horse b. Dog
c. Ox d. Fowl

496. Ventricles of the brain are lined by

a. Astrocyte b. Ependyma
c. Schwann cell d. Oligodendrocyte

497. Soft pulpy central part of the intervertebral fibro-cartilage is known as

a. Annulus fibrosus b. Nucleus pulposus
c. Ligamenta flava d. None of the above

498. Red pulp is characteristic of

a. Lymph node b. Bursa
c. Spleen d. Thymus

499. The ischial tuberosity in ox is

a. Bifid b. Trifid
c. Quadrifid d. Single

500. Deep impressions of ribs are present on the lungs of

a. Ox b. Sheep
c. Horse d. Fowl

501. Acetabulum is perforated in

a. Fowl b. Ox
c. Horse d. Dog

502. Psoas tubercle present in the medial surface of

a. Ilium
b. Ischium
c. Pubis
d. None of the above

503. Useful artery for embalming is

a. Frontal b. Coronary
c. Carotid d. Maxillary

504. The length between the body of sacrum and the cranial end of pubic symphysis is known as

a. Transverse diameter
b. Conjugate diameter
c. Both a and b
d. None of the above

505. Fovea capitis is present in

a. Ilium b. Ischium
c. Femur d. Tibia

506. Soft palate is absent in

a. Ox b. Horse
c. Dog d. Fowl

507. A sharp ridge on bone is termed as

a. Line b. Spine
c. Crest d. Process

508. Foves capitis is notched in

a. Dog b. Ox
c. Horse d. Fowl

509. Popliteal lines are present on the posterior surface of

a. Femur b. Tibia
c. Fibula d. All of the above

510. Calcaneal tubercle is present in
a. Tibial tarsal
b. Fibular tarsal
c. Accessory tarsal
d. None of the above

511. Achilles tendon is peculiarity of
a. Forelimb
b. Hindlimb
c. Neck
d. None of the above

512. Number of metatarsal bones in the pig is
a. 2 b. 3
c. 4 d. 5

513. Superficial gluteus muscle is absent in
a. Ox b. Horse
c. Dog d. All of the above

514. Os cordis is present in the heart of
a. Ox b. Horse
c. Dog d. Fowl

515. Hook bone is also known as
a. Tuber sacrale b. Tuber coxae
c. Tuber ischii d. Iliac crest

516. Point of hock is formed by
a. Tibia b. Fibula
c. Tibial tarsal d. Fibular tarsal

517. Stirrup shaped bone of the ear is
a. Malleus b. Incus
c. Stapes d. All of the above

518. Point of hip is formed by
a. Tuber ischii
b. Tuber sacrale
c. Tuber coxae
d. Iliac crest

519. Macula densa is seen in
a. Proximal convoluted tubule
b. Distal convoluted tubule
c. Thin loop of Henle
d. Collecting duct

520. Lumbo-sacral plexus is formed by
a. L_5, L_6, L_7 with S_1 and S_2
b. L_4, L_5, L_6 with S_1 and S_2
c. L_5, L_6 with S_1, S_2 and S_3
d. L_5, L_6, L_7 with S_1 and S_2

521. Diverticulum duodeni of horse contains the openings of
a. Bile duct
b. Hepatic duct
c. Pancreatic duct
d. Both b and c

522. Oxyntic cells are also known as
a. Chief cells
b. Parietal cells
c. Argentaffin cells
d. All of the above

523. Small Intestine is lined by
a. Simple squamous epithelium
b. Simple cuboidal epithelium
c. Stratified squamous epithelium
d. Simple columnar epithelium

524. In cerebrum the nerve cells are arranged in
a. Single layer
b. Three layers
c. Five layers
d. Six layers

525. The renal corpuscle is composed of
a. Glomerulus
b. Bowman's capsule
c. Collecting duct
d. Both a and b

526. Islets of Langerhans in the pancreas is
a. Exocrine part
b. Endocrine part
c. Mixed type
d. None of the above

527. Bruch's membrane is a thickened basement membrane of
a. Sclera
b. Cornea
c. Choroid
d. Retina

528. Purkinje cells are found in

a. Cerebrum b. Cerebellum
c. Pons d. Medulla

529. Crown of the teeth is formed by

a. Dentine b. Enamel
c. Cementum d. None of the above

530. A dilated structure close to the ileo-caecal junction in rabbit is known as

a. Ansa spiralis
b. Sacculus rotundus
c. Vermiform appendix
d. Meckel's diverticulum

531. Cavity of the bony labyrinth is filled with

a. Endolymph b. Perilymph
c. Haemolymph d. Chylous fluid

532. A line which separates non glandular and glandular parts of the stomach in horses is called

a. Taenia coli b. Saccus cecus
c. Margoplicatus d. Taenia ceci

533. Structural and functional unit of the kidney is

a. Bowman's capsule
b. Glomerular tuft
c. Malphigian corpuscles
d. Nephron

534. Volume of the abdominal cavity occupied by the rumen in adults is

a. 80% b. 5%
c. 7% d. 8%

535. Lining epithelium of the renal pelvis is

a. Transitional epithelium
b. Simple squamous epithelium
c. Simple cuboidal epithelium
d. Simple columnar epithelium

536. Lining epithelium of ductus epididymis is

a. Pseudostratified columnar epithelium with stereocilia
b. Simple columnar epithelium with stereocilia
c. Simple cuboidal epithelium with kinocilia
d. Simple squamous epithelium with kinocilia

537. Lining epithelium of the Bowman's capsule is

a. Stratified squamous epithelium
b. Simple squamous epithelium
c. Pseudo stratified columnar epithelium
d. Simple columnar epithelium

538. Areas with infiltration of RBCs in splenic sinusoids and splenic cords is known as

a. Red pulp b. White pulp
c. Penicillar vessels d. Ellipsoids

539. The pin bone is

a. Ilium b. Ischium
c. Pubis d. Sacrum

540. Bursa of Fabricius in birds is seen in

a. Proctodeum b. Coprodeum
c. Urodeum d. None of the above

541. Muscle present in the medial aspect of the thigh region is

a. Gluteus medius b. Semitendinosus
c. Biceps femoris d. Sartorius

542. Penicillar vessels are the characteristic of

a. Liver b. Pancreas
c. Spleen d. Thyroid

543. Cruciate ligaments are present in

a. Hip joint b. Stifle joint
c. Hock joint d. Shoulder joint

544. Funnel shaped end of the oviduct is called

a. Infundibulum b. Isthmus
c. Ampulla d. Uterus

545. Non ciliated secretory cells of oviduct is termed as

a. Dust cells b. Peg cells
c. Kupffer cells d. Caruncles

546. Nissl bodies of the neuron represent

a. Endoplasmic reticulum
b. Mitochondria
c. Microtubules
d. Granular lysosomes

547.A gel like substance present in the cavity of the thyroid follicle is called

a. Colloid b. Sebum
c. Cerumen d. Liquor pruris

548.In duodenum Brunner's glands are present in

a. Mucus membrane
b. Submucosa
c. Tunica muscularis
d. Tunica serosa

549.Functional unit of striated muscle fibre is known as

a. Astrocyte b. Myocyte
c. Myofibril d. Sarcomere

550.Gustatory papillae are

a. Fungiform papillae
b. Circumvallate papillae
c. Foliate papillae
d. All of the above

551.Step that follows next to infiltration in tissue processing is

a. Clearing b. Embedding
c. Fixing d. Dehydration

552.Cloacal compartment to which oviduct opens is

a. Coprodeum b. Urodeum
c. Proctodeum d. Vent

553.C shaped rings of trachea composed of

a. Hyaline cartilage
b. Elastic cartilage
c. Fibro cartilage
d. None

554.Ilioischiatic foramen is present in

a. Pig b. Horse
c. Ox d. Fowl

555.Peritoneum is lined by

a. Stratified squamous epithelium
b. Simple cuboidal epithelium
c. Simple squamous epithelium
d. Simple columnar epithelium

556.Rounded football shaped structure located on right side of median plane in the abdomen is

a. Rumen b. Reticulum
c. Omasum d. Abomasum

557.Functional blood supply of the liver is by

a. Portal vein b. Portal artery
c. Hepatic artery d. Hepatic vein

558.Connective tissue covering of fascicle of the nerve fibres is called

a. Epineurium
b. Perineurium
c. Endoneurium
d. None of the above

559.Club cells are found in the

a. Trachea b. Bronchi
c. Bronchioles d. Heart

560.Myenteric plexus lies between the layers of

a. Tunica mucosa
b. Tunica adventitia
c. Tunica serosa
d. Tunica muscularis

561.Each nerve fibre is surrounded by a connective tissue sheath called as

a. Epineurium
b. Perineurium
c. Endoneurium
d. None of the above

562.Epiglottis is lined by

a. Simple squamous epithelium
b. Simple cuboidal epithelium
c. Stratified squamous epithelium
d. Pseudo stratified ciliated columnar epithelium

563.Lash of long nerve root at the end of spinal cord appear as tail of horse is termed

a. Conus medullaris
b. Filum terminale
c. Cauda equina
d. Linea splendens

564. Connective tissue covering of entire nerve trunk is called
a. Epineurium
b. Perineurium
c. Endoneurium
d. None of the above

565. Basic unit for gas exchange in the lungs is
a. Alveoli b. Bronchi
c. Bronchiole d. Trachea

566. A lipid rich insulating sheath around the axon is called
a. Nodes of Ranvier b. Ependyma
c. Myelin sheath d. Filum terminale

567. Structural and functional cells of the nervous tissue are
a. Neurons b. Neurolemmocytes
c. Neuroglia d. All of the above

568. Thickest tunic of the blood vessels is
a. Tunica intima b. Tunica media
c. Tunica adventitia d. Endothelium

569. Alpha cells of islets of Langerhans secretes
a. Insulin b. Glucagon
c. Somatostatin d. Thymosin

570. Myelin sheath in the peripheral nervous system (PNS) is formed by
a. Astrocyte
b. Ependyma
c. Oligodendrocyte
d. Schwann cells (neurolemmocytes)

571. Myelin sheath in the central nervous system (CNS) is formed by
a. Astrocyte
b. Ependyma
c. Oligodendrocyte
d. Schwann cells (neurolemmocytes)

572. Delta cells of islets of Langerhans secretes
a. Insulin b. Glucagon
c. Somatostatin d. Thymosin

573. Vena hemiazygos opens in the
a. Right atrium b. Left atrium
c. Right ventricle d. Left ventricle

574. A gap in the myelin sheath of a nerve between adjacent schwann cells is called
a. Nodes of Ranvier b. Ependyma
c. Conus medularis d. Filum terminale

575. Cerebrospinal fluid is present in
a. Epidural space
b. Subdural space
c. Subarachnoid space
d. None of the above

576. Primary lymphoid organ includes
a. Bone marrow
b. Thymus
c. Aggregated lymphatic nodules of the small intestine
d. All of the above

577. "Call Exner" bodies are seen in
a. Testis b. Ovary
c. Adrenal d. Thyroid

578. Cells present in between the seminiferous tubules are
a. Sertoli cells b. Leydig cells
c. Spermatogonia d. None of the above

579. Mesencephalon (Midbrain) consists of
a. Aqueduct of sylvius
b. Corpora quadrigemina
c. Crura cerebri
d. All of the above

580. Podocytes are found on
a. Visceral layer of Bowman's capsule
b. Parietal layer of Bowman's capsule
c. Glomerular capillaries
d. None of the above

581. Macula densa is found in
a. Proximal convoluted tubule
b. Distal convoluted tubule
c. Afferent arteriole
d. Collecting tubule

582. Mushroom shaped papillae are

a. Filiform b. Fungiform
c. Foliate d. Vallate

583. Number of vallate papillae on each side of tongue in ox is

a. 2 - 4 b. 1 - 2
c. 10 - 16 d. 50 - 100

584. Urinary bladder is lined by

a. Stratified squamous epithelium
b. Stratified columnar epithelium
c. Transitional epithelium
d. Simple squamous epithelium

585. Pituicytes are present in

a. Thyroid b. Parathyroid
c. Pineal d. Pituitary

586. Lining epithelium of trachea is

a. Pseudo stratified ciliated columnar
b. Ciliated columnar epithelium
c. Transitional epithelium
d. None of the above

587. Corpora nigra is present in

a. Iris b. Choroid
c. Sclera d. Retina

588. Percentage of inorganic intercellular substances present in the enamel is

a. 96 to 99% b. 26 to 28%
c. 60 to 70% d. 80 to 85%

589. CSF filled ventricles in the brain and the central canal of the spinal canal is lined by

a. Hepatocytes
b. Pancreatic acinar cells
c. Tanycytes
d. Ependyma

590. Cells which synthesis and store insulin in pancreatic islets are

a. Alpha cells
b. Beta cells
c. Delta cells
d. Gamma cells

591. Mammillary body is a part of

a. Telencephalon
b. Myelencephalon
c. Diencephalon
d. Mesencephalon

592. Peyer's patches are found in

a. Ileum b. Duodenum
c. Colon d. Caecum

593. Melanocytes are located in which layer of the epidermis

a. Basal layer b. Prickle layer
c. Granular layer d. Horny layer

594. Nerve plexus present between the inner circular and outer longitudinal layers of the muscularis externa of intestine is

a. Heller's plexus
b. Auerbach's plexus
c. Meissner's plexus
d. Pampiniform plexus

595. Muller cells are found in

a. Pancreas b. Spleen
c. Skin d. Retina

596. Amacrine cells are present in

a. Pancreas b. Spleen
c. Skin d. Retina

597. Large intestine is characterized by

a. Absence of villi, crypts of lieberkuhn and very less numbers of goblet cells
b. Presence of villi, crypts of lieberkuhn and numerous goblet cells
c. Absence of villi, crypts of lieberkuhn and numerous goblet cells
d. Absence of villi, crypts of lieberkuhn and goblet cells

598. The afferent processes or cytoplasmic extensions of cyton are known as

a. Axon
b. Dendrites
c. Telodendria
d. Nodes of Ranvier

599. Phagocytic cell found in the sinusoids of the liver is

a. Mast cell b. Kupffer cell
c. Plasma cell d. Granulocyte

600. Most numerous papillae of the tongue is

a. Filiform b. Fungiform
c. Foliate d. Vallate

601. Largest nerve of the body is

a. Femoral nerve b. Obturator nerve
c. Tibial nerve d. Sciatic nerve

602. Area with minor calcification in the dentine are referred as

a. Interglobular spaces of Owen
b. Sheath of Neumann
c. Tomes granular layer
d. Space of Disse

603. Most powerful extensor of the thigh region is

a. Quadratus femoris
b. Quadratus lumborum
c. Quadriceps femoris
d. Biceps femoris

604. Lobulated kidney is found in

a. Ox b. Horse
c. Dog d. Pig

605. Corpora amylacea is a microscopic feature of

a. Testis b. Ovary
c. Mammary gland d. Pineal gland

606. Branching pattern of laminar folds in the sagittal section of cerebellum is called

a. Arbor vitae
b. Purkinje cells
c. Conus medullaris
d. Molecular cell layer

607. Splint bones are present in

a. Sheep b. Goat
c. Dog d. Horse

608. Spaces of Disse is present in

a. Spleen b. Lungs
c. Liver d. Intestine

609. Corpora arenacea is seen in

a. Prostate gland b. Pineal gland
c. Parotid gland d. Testis

610. Space between arachnoid and piamater is known as

a. Epidural space
b. Subdural space
c. Subarachnoid space
d. None of the above

611. Oesophagus is lined by

a. Simple squamous epithelium
b. Stratified squamous epithelium
c. Simple columnar epithelium
d. Transitional epithelium

612. A thickening of the piamater lies along the inferior median line of spinal cord is called

a. Conus medullaris
b. Filum terminale
c. Linea splendens
d. Ligamentum denticulatum

613. Nurse cells or supporting cells of testes are

a. Sertoli cells b. Spermatogonia
c. Leydig cells d. Interstitial cells

614. Endothelium is a type of

a. Simple squamous epithelium
b. Stratified squamous epithelium
c. Simple columnar epithelium
d. Transitional epithelium

615. In cerebellum (cerebellar cortex) the nerve cells are arranged in

a. Single layer b. Three layers
c. Five layers d. Six layers

616. Juxta glomerular cells are present in

a. Proximal convoluted tubule
b. Distal convoluted tubule
c. Afferent arteriole
d. Efferent arteriole

617. Hair follicle is the part of

a. Epidermis b. Dermis
c. Hypodermis d. Epithelium

618. Pancreas is placed between the ascending and descending limb of duodenum is

a. Ox b. Horse
c. Dog d. Fowl

619. The mammary gland is classified in

a. Alveolar type b. Tubular type
c. Tubuloalveolar d. Coiled

620. Periarteriolar lymphoid sheaths of spleen are largely populated by

a. B cells b. T cells
c. NK cells d. Neutrophils

621. Lining epithelium of nasal mucosa is

a. Simple squamous epithelium
b. Simple columnar epithelium
c. Pseudo stratified ciliated columnar epithelium
d. Pseudo stratified non ciliated columnar epithelium

622. Cone shaped terminal part of spinal cord is called

a. Conus medullaris b. Filum terminale
c. Cauda equine d. Falx cerebri

623. A thick, amorphous layer, between the primary oocyte and the membrana granulosa is called

a. Theca externa
b. Theca interna
c. Zona pellucida
d. Vitelline membrane

624. Urinary bladder is absent in

a. Ox b. Horse
c. Fowl d. Dog

625. Tongue is lined by

a. Simple squamous epithelium
b. Stratified squamous epithelium
c. Simple columnar epithelium
d. Stratified columnar epithelium

626. Chromophil substance present in the body of nerve cell is called

a. Axon b. Dendrites
c. Nissl bodies d. Cyton

627. In which species ileum opens into the colon directly

a. Ox b. Horse
c. Dog d. Fowl

628. Sphincter of Oddi guards the opening of

a. Hepato-pancreatic duct
b. Common bile duct
c. Pancreatic duct
d. Bile duct

Answer Sheet

1. c	2. a	3. c	4. a	5. d	6. a	7. c	8. b	9. b	10. a
11. c	12. b	13. c	14. a	15. a	16. b	17. a	18. d	19. a	20. d
21. c	22. d	23. a	24. b	25. b	26. d	27. a	28. b	29. a	30. c
31. a	32. b	33. c	34. a	35. a	36. d	37. b	38. a	39. a	40. c
41. a	42. b	43. b	44. b	45. b	46. d	47. b	48. a	49. b	50. c
51. b	52. c	53. d	54. a	55. d	56. a	57. a	58. d	59. d	60. d
61. a	62. d	63. b	64. c	65. a	66. c	67. b	68. a	69. a	70. d
71. c	72. d	73. c	74. a	75. b	76. c	77. b	78. d	79. b	80. a
81. a	82. a	83. d	84. c	85. c	86. b	87. d	88. a	89. b	90. a
91. b	92. c	93. a	94. c	95. b	96. d	97. c	98. a	99. d	100. a
101. b	102. c	103. c	104. b	105. d	106. c	107. c	108. d	109. c	110. b
111. d	112. c	113. a	114. b	115. c	116. c	117. b	118. a	119. c	120. d
121. c	122. b	123. d	124. a	125. d	126. c	127. a	128. b	129. a	130. d
131. a	132. a	133. b	134. a	135. c	136. a	137. b	138. a	139. c	140. b
141. a	142. b	143. a	144. a	145. d	146. a	147. c	148. a	149. b	150. a
151. a	152. c	153. d	154. b	155. d	156. d	157. a	158. d	159. a	160. d
161. a	162. a	163. b	164. b	165. a	166. c	167. c	168. b	169. a	170. b
171. c	172. b	173. b	174. a	175. c	176. b	177. d	178. d	179. a	180. b
181. a	182. a	183. d	184. c	185. a	186. a	187. c	188. b	189. b	190. d
191. a	192. d	193. c	194. c	195. a	196. d	197. d	198. b	199. c	200. a
201. d	202. c	203. a	204. d	205. b	206. b	207. a	208. a	209. a	210. d
211. a	212. b	213. a	214. d	215. b	216. c	217. c	218. a	219. a	220. a
221. a	222. c	223. b	224. b	225. d	226. d	227. a	228. d	229. d	230. d
231. c	232. b	233. a	234. c	235. a	236. d	237. c	238. a	239. b	240. a
241. a	242. b	243. d	244. a	245. b	246. a	247. b	248. d	249. b	250. a
251. b	252. d	253. b	254. a	255. b	256. d	257. a	258. a	259. c	260. b
261. a	262. c	263. b	264. b	265. b	266. a	267. c	268. a	269. c	270. c
271. d	272. b	273. b	274. b	275. b	276. c	277. c	278. b	279. c	280. a
281. a	282. b	283. a	284. d	285. d	286. a	287. b	288. a	289. a	290. a
291. b	292. b	293. b	294. a	295. b	296. b	297. a	298. c	299. c	300. a
301. a	302. b	303. b	304. d	305. a	306. b	307. b	308. b	309. c	310. b
311. b	312. a	313. d	314. b	315. d	316. b	317. c	318. d	319. c	320. b

321. a	322. c	323. b	324. a	325. b	326. c	327. c	328. b	329. a	330. a
331. b	332. c	333. b	334. c	335. b	336. c	337. a	338. a	339. b	340. a
341. d	342. c	343. c	344. d	345. c	346. b	347. c	348. b	349. a	350. d
351. c	352. d	353. c	354. a	355. b	356. c	357. a	358. c	359. c	360. a
361. b	362. d	363. c	364. b	365. b	366. c	367. d	368. d	369. c	370. d
371. b	372. d	373. b	374. a	375. d	376. b	377. c	378. c	379. a	380. c
381. b	382. d	383. a	384. a	385. b	386. b	387. b	388. b	389. b	390. b
391. b	392. b	393. c	394. c	395. d	396. c	397. d	398. a	399. a	400. d
401. a	402. a	403. c	404. d	405. a	406. c	407. d	408. d	409. a	410. b
411. a	412. d	413. d	414. d	415. b	416. c	417. b	418. b	419. a	420. c
421. d	422. b	423. d	424. b	425. b	426. c	427. c	428. a	429. b	430. c
431. a	432. a	433. d	434. a	435. d	436. c	437. c	438. a	439. a	440. d
441. c	442. b	443. c	444. c	445. a	446. b	447. d	448. a	449. a	450. c
451. a	452. c	453. c	454. c	455. b	456. b	457. a	458. a	459. c	460. b
461. d	462. c	463. a	464. d	465. a	466. d	467. d	468. d	469. a	470. d
471. a	472. b	473. c	474. d	475. d	476. d	477. d	478. c	479. c	480. a
481. b	482. d	483. a	484. c	485. a	486. b	487. d	488. c	489. b	490. a
491. b	492. c	493. a	494. a	495. c	496. b	497. b	498. c	499. b	500. d
501. a	502. a	503. c	504. b	505. c	506. d	507. c	508. c	509. b	510. b
511. b	512. c	513. a	514. a	515. b	516. d	517. c	518. c	519. b	520. b
521. d	522. b	523. d	524. d	525. d	526. b	527. c	528. b	529. b	530. b
531. b	532. c	533. d	534. a	535. a	536. a	537. b	538. a	539. b	540. a
541. d	542. c	543. b	544. a	545. b	546. a	547. a	548. b	549. d	550. d
551. a	552. b	553. a	554. d	555. c	556. c	557. a	558. b	559. c	560. d
561. c	562. c	563. c	564. a	565. a	566. c	567. a	568. b	569. b	570. d
571. c	572. c	573. a	574. a	575. c	576. d	577. b	578. b	579. d	580. a
581. b	582. b	583. c	584. c	585. d	586. a	587. a	588. a	589. d	590. b
591. c	592. a	593. a	594. b	595. d	596. d	597. c	598. b	599. b	600. a
601. d	602. a	603. c	604. a	605. c	606. a	607. d	608. c	609. b	610. c
611. b	612. c	613. a	614. a	615. b	616. c	617. b	618. d	619. c	620. b
621. c	622. a	623. c	624. c	625. b	626. c	627. c	628. a		

Unit – 2

Veterinary Pathology

History of Pathology

Scientist	Contribution
Hippocrates	Father of Medicine Humoral theory of the disease (health was due to a correct mixture of the four fluids of body)
Aristotle	Originator of modern anatomy and physiology
Claudius Galen	Father of Anatomy
Xavier Bichat	Father of Histology The word 'tissue' was first introduced by him
Antonio Benivieni	Father of Pathological Anatomy Founder of Pathology
Renatus Vegetius	Father of Veterinary Medicine First to write a textbook on veterinary medicine 'Book of the Veterinary Art'
Edward Jenner	Father of Immunology Discovered vaccination for smallpox
Rudolph Virchow	Father of Cellular Pathology Father of Modern Pathology Described the fifth cardinal signs of inflammation
John Hunter	First Experimental Pathologist
Jean Fernel	First Textbook on Pathology
Leonardo da Vinci	First Modern Dissector
Cornelius Celsus	Described the four cardinal signs of inflammation

Julius Cohnheim	Originator of Modern Experimental Pathology Vascular and cellular changes of inflammation
Stanley Prusiner	Discovery of "Prions"
William Harvey	Discovery of blood circulation
Marcello Malpighi	Discovered the capillaries and erythrocytes Discovered Malpighian layer of the skin
Hans and Zacharias Jannsen	Invention of the microscope
Christian de Duve	Discovery of Lysosomes (Suicidal Bags)
Elie Metchnikoff	Discovered the process of phagocytosis

Cell injury (Cellular degenerations)

Type of cell injury	Remarks
Cellular swelling (Cloudy swelling, Parenchymatous degeneration, Albuminous degeneration)	» Due to disturbance in protein metabolism » Swelling of cells » Cytoplasm of cell becomes more granular than normal » Most common disturbance of cell metabolism » First reaction of a cell to injury » Caused by the mildest irritants » Cut surface is cloudy, slightly opaque, and appears slightly scalded or cooked
Hydropic Degeneration Vacuolar degeneration	» Due to disturbance in protein metabolism » Closely related to cellular swelling » Cells take on clear fluid to such an extent that they swell and may burst » Failure of Na-K pump is main cause » Aetiology: Mechanical injuries, Thermal injuries (both heat and cold), Chemical injuries (croton oil, cantharidin, red iodide of mercury) and Infectious agents (pox viruses, foot-and mouth disease, vesicular exanthema of swine) » Hydropic change occurs mainly in the prickle-cell layer (Stratum spinosum).

Mucinous Degeneration Mucous Degeneration	» Due to disturbance in protein metabolism » Excessive accumulation of mucin in degenerating epithelial cells » Mucin is a glassy, viscid, stringy and slimy glycoprotein » Mucin producing cells are called goblet cells » When mucin is mixed with water or tissue fluid, it is known as mucus » Aetiology: Muçinous or mucous degeneration occurs whenever a mild irritant is applied to a mucous membrane » Stain: Haematoxylin (blue), thionin, mucicarmine and PAS (red)
Mucoid degeneration Myxomatous Degeneration	» Due to disturbance in protein metabolism » Appearance of glycoprotein similar to mucin in connective tissue » Aetiology: Sometimes mucin like glycoprotein produced by fetus is found in the adult as mucoid degeneration » Ex: Tumours (Myxomas and myxosarcomas) and Myxoedema (Thyroid deficiency disease) » Pseudomucin: It is the normal secretion of ovarian tissue and para ovarian cysts, observed in ovarian cystadenomas and cystadenocarcinomas
Hyaline Change	» Due to disturbance in protein metabolism » It gives the tissue a homogeneous, glassy, translucent, pink appearance in H and E » The affected cells and tissues lose their structural characteristics and fuse together into a homogeneous mass » **Keratohyalin**: Ex: Stratum corneum, corns and bunions, hyperkeratosis, Squamous Cell Carcinoma » **Cellular hyalin**: Occurs in cells other than those found in stratified squamous epithelium and connective tissue. Ex: Corpora amylacea (prostate, mammary glands), "Brain sand" and in the islets of Langerhans in individuals having diabetes » **Connective tissue hyalin**: Observed in old scars, in the degenerating stroma of tumours, in renal glomeruli in chronic nephritis, and in the blood vessels in arteriosclerosis.

Amyloid degeneration Waxy degeneration	» Deposition of amyloid in the interstitial tissues » Due to disturbance in protein metabolism » Physical nature of amyloid: Protein with "beta-pleated sheet structure" » **Sago spleen:** Focal amyloidosis » **Bacon spleen:** Generalized amyloidosis » **Lardaceous spleen:** Large, sheet-like deposits of amyloid in spleen » **Stain:** Congo red (red), Eosin (pink), Van Gieson (yellow), Methyl violet and Methyl green (red) » Amyloid deposition is a permanent change, and persists for the life of the individual
Fatty Change (Fatty degeneration, Fatty infiltration)	» Any abnormal accumulation of neutral fat (triglycerides) within parenchymal cells » Fatty change is mostly seen in liver » Alcohol is the most common cause of fatty liver » Lipotropic factors: For transformation of neutral fats (triglycerides) to phospholipids, choline is needed and it is therefore called a 'lipotropic factor » Fat is white in cat and buffalo, yellow in cattle, and orange in horse » Cut surface usually bulges and has a greasy appearance » Heart: 'Thrush breast' or 'Tigered' effect » It is necessary to prepare frozen tissue sections to identify the fat » Stain: Oil Red-O, Sudan IV, Osmic acid
Glycogen	» Glycogen infiltration is observed in rapidly growing tumours and suppurative inflammation » Glycogen accumulates within the cells in a group of genetic diseases called "glycogen storage diseases or glycogenoses » Glycogen masses appear as clear vacuoles within the cytoplasm » Only carbohydrate that can be seen under microscope » Tissues must be fixed immediately after death in non-aqueous fixatives (Absolute alcohol) to identify the glycogen » Stain: Iodine stains it reddish brown, and Best's carmine and PAS stains it bright red

Nutritional Diseases (Vitamin deficiency diseases)

Vitamin	Deficiency disease	Remark
Vitamin A (Retinol)	» Night Blindness (Nyctalopia) » Xerophthalmia » Keratomalacia » Nutritional roup in birds » Bitot spots [Small opaque plaques in eyes] » Keratitis/Keratinization of epithelium » Squamous metaplasia » Gout in poultry	» Anti-infective vitamin » Fat soluble vitamin
Vitamin D (Calciferol)	» Rickets (Young animal) » Osteomalacia (Adult animal) » Hypocalcaemia » Hypophosphatemia » Osteoporosis » Penguin like squat in fowl » Soft shelled egg » Impaired absorption of Ca and P	» Anti-rachitic vitamin » Active form: 1, 25-Dihydroxy cholecalciferol » Vit - D2 : Ergocalciferol » Vit - D3 : Cholecalciferol » Fat soluble vitamin
Vitamin E (Tocopherol)	» White muscle disease (nutritional myopathy) in young animals » Stiff -lamb disease in suckling lambs » Mulberry heart disease in pigs » Hepatosis dietetica or acute hepatic necrosis or dietary hepatic necrosis in young pigs » Yellow fat disease or pansteatitis in cats » Crazy chick disease or Nutritional encephalomalacia (chickens) » Exudative diathesis (chickens) » Nutritional muscular dystrophy or myopathy (Chickens) » Equine myoglobinuria in Horse or Azoturia » Ceroid (accumulation of an oily, waxy pigment) » Enlarged hock disorder in turkey » Infertility	» Anti-sterility Vitamin » Antioxidant » Vitamin A sparer » Fat soluble vitamin

Vitamin K	» Haemorrhagic sweet clover disease » Bleeding diathesis in ruminants » Fat malabsorption syndrome	» Anti-haemorrhagic Vitamin » Vit-K_1 : Phylloquinone » Vit-K_2: Menaquinone » Vit-K_3: Menadione » Synthetic form of Vit-K: Vit-K_3 » Fat soluble vitamin
Vitamin B_1 (Thiamine)	» Polyneuritis in birds » Star gazing (chickens) » Polioencephalomalacia (PEM) in ruminants » Chastek paralysis in fox » Cerebrocortical necrosis (CCN) in ruminants » Peripheral neuropathy » Beriberi (Humans)	» Anti-beriberi Vitamin » Water soluble vitamin
Vitamin B_2 (Riboflavin)	» Curled-toe paralysis (chicken) » Clubbed down condition (chicken) » Crooked leg (swine) » Glossitis and cheilosis (human)	» Vitamin G » Yellow enzyme
Vitamin B_3 (Niacin or Nicotinic acid)	» Pellagra or (Black tongue) or Stuttgart disease (canine) » Chondrodystrophy (chickens) » Human pellagra (blue tongue) » Dermatitis, Diarrhea, Dementia and Death (4Ds)	» Anti-pellagra factor » Vitamin PP or PP-factor
Vitamin B_5 (Pantothenic acid)	» Goose stepping gait (Pig) » Dermatitis (chickens)	» Anti-dermatitis factor » Filtrate factor
Vitamin B_6 (Pyridoxine)	» Microcytic, hypochromic anaemia (pigs and dogs)	» Yeast eluate factor
Vitamin B_7 (Biotin)	» "Parrot beak" (chickens) » Chondrodystrophyia (chickens) » Fatty liver and kidney syndrome (chickens) » Perosis (slipped tendon) (chickens) » Spectacle eye in rat » Broken feather incrustation of feet	» Vitamin-H » Coenzyme R » Anti- egg white injury factor » Avidin present in egg causes Biotin deficiency

Vitamin B_9 (Folic acid)	» Macrocytic hypochromic (megaloblastic anaemia)	» Anti-anaemia factor » Vitamin M » Factor U
Choline	» Perosis or slipped tendon » Fatty liver in newborn pigs & calves	» Vitamin B4 » Lipotropic factor
Vitamin B_{12} (Cyanocobalamine)	» Megaloblastic anaemia » Wobbly gait in swine » Neuropathy » Pernicious anaemia in human » Hydrocephalous in rat	» Anti-pernicious anaemia Vit. » Animal protein factor » Chick growth factor » Cow manure factor » Zoopherin
Vitamin C (Ascorbic acid)	» Scurvy » Battery sickness » Haemorrhagic diathesis » Severe heat stress (chicken) » Pithed frog position in new born » Delay in wound healing	» Antiscorbutic factor » Antioxidant » Water soluble vitamin

Mineral deficiency diseases

Mineral	Deficiency diseases	Toxicity
Calcium	1. Rickets (young animal) 2. Osteomalacia (adult animal) 3. Milk fever (Parturient paresis) 4. Eclampsia (Bitches) 5. Calcium tetany in young animal 6. Cage layer fatigue 7. Osteoporosis 8. Osteopenia 9. Soft shelled eggs (Leathery egg) 10. Bowed leg , Soft beak	1. Osteopetrosis (marble bone disease, dense bone) 2. Kidney stone 3. Nephropathy 4. Visceral gout in chickens
Phosphorus	1. Pica (depraved appetite or Allotriophagia) 2. Lamsiekte disease (lame sickness) 3. Post Parturient Haemoglobinuria (PPH) 4. Osteoporosis 5. Poor fertility 6. Irregularity of estrus 7. Stiffness of gait /stiff joint	Big head disease (Nutritional secondary hyperparathyroidism, Bran disease, Miller's disease, Osteodystrophia fibrosa)

Magnesium	1. Grass tetany (grass staggers) 2. Wheat poisoning 3. Lactation tetany / Hypomagnesaemic tetany (cattle) 4. Pigs stepping syndrome	
Sodium	1. Dehydration 2. Keratinization of corneal epithelium 3. Cannibalism in poultry 4. Lowers protein utilization 5. Heat exhaustion	1. Watery faeces 2. Increased water consumption 3. Salt toxicity
Potassium	1. Decreased growth rate 2. General weakness	
Sulphur	1. Poor quality wool production in sheep 2. Sulphur rickets 3. Microbial synthesis reduced in ruminants 4. Reduced feed intake	
Iron	1. Piglet anaemia (Thumps) 2. Hypochromic microcytic anaemia 3. Achromatrichia in fowl	1. Siderosis 2. Haemochromatosis in human
Copper	1. Enzootic ataxia in lamb 2. Sway back disease 3. Falling disease in cattle (chronic Cu deficiency) 4. Lechsucht or copper pine or wasting disease of cattle and sheep 5. Microcytic hypochromic anaemia 6. Stringy or steely wool in sheep 7. Depigmentation of hair , feather & wool 8. Peat scours in cattle and sheep 9. Bone disorder	Human: Wilson disease
Cobalt	1. Normocytic normochromic anaemia 2. Enzootic marasmus in Australia 3. Hill sickness 4. Pine disease 5. Grand Traverse Disease 6. Cattle coast disease 7. Reduced vitamin B_{12} level in blood	

Manganese	1. Perosis 2. Slipped tendon 3. Chondrodystrophy 4. Crooked legs and enlarged hocks in swine 5. Parrot beaks	
Iodine	1. Goiter	Iodide goiter/Iodism
Zinc	1. Parakeratosis in pigs 2. Decrease cellular immunity	Anaemia
Molybdenum	1. Poor growth & depressed hatchability 2. Increases copper deficiency 3. Extreme diarrhoea	1. Teartness 2. Molybdenosis
Selenium	1. Exudative diathesis (haemorrhagic disease) in chickens 2. White muscle disease (Muscular dystrophy) 3. Stiff lamb disease 4. Gizzard myopathy in turkey 5. Hepatic necrosis in rats and pigs 6. Nutritional myopathy	1. Blind staggers in cattle (acute) 2. Degnala disease (sub-acute) 3. Alkali disease (chronic) 4. Bob-tail disease 5. Selenosis 6. Generalized muscular weakness
Fluorine	1. Tooth decay	1. Fluorosis 2. Exostoses (bone outgrowth) 3. Shifting lameness 4. Chalky and mottling appearance in teeth

Hypersensitivity Reactions

Type	Remark
Type I Hypersensitivity	» Anaphylaxis » Allergy » Asthma » Mediated by IgE » Immediate type of hypersensitivity » Antibody mediated hypersensitivity » Th_2 type cell are involved, with IL-4 and IL-5 as main cytokines

Type II Hypersensitivity	» Haemolytic disease of the newborn » Erythroblastosis foetalis » Autoimmune haemolytic anaemia » Transfusion reactions » Antibody mediated hypersensitivity (IgG and IgM)
Type III Hypersensitivity	» Systemic: Serum sickness » Local: Arthus reaction » Glomerulonephritis » Immune complex mediated hypersensitivity
Type IV Hypersensitivity	» Tuberculin, Brucellein, Mallein, Johnin testing » Delayed type of hypersensitivity » Contact dermatitis, » Transplant rejection » Cell mediated Hypersensitivity » Th1 type cell are involved, with INF-γ and IL-2 as main cytokines » Major defense mechanism against intracellular organism

Autoimmune diseases

Disease	Remark
SLE	• Antinuclear antibodies (ANA) • LE cells: Neutrophils that have phagocytosed nuclei from dead cells
DLE	• Antinuclear antibodies (ANA)
Pemphigus	• Autoantibodies against intercellular cement • Disease involves blister or vesicle formation in skin • Most severe form is "Pemphigus vulgaris" • "Pemphigus foliaceous" is milder and more common
Myasthenia gravis	• Autoantibodies against acetylcholine receptors
Rheumatoid arthritis	• Autoantibodies against IgG and Type II collagen • Autoantibodies against IgG is characteristic of RA • Rheumatoid factors (RF): Autoantibodies against IgG • Outgrowths called "pannus" extend into the joint cavities
Autoimmune Nephritis	• Autoantibodies against glomerular basement membranes (GBMs) • Goodpasture's syndrome

Autoimmune Thrombocytopaenia	• Antiplatelet autoantibodies
Sjogren's Syndrome	• Autoantibodies against salivary and lachrymal glands • Kerato-conjunctivitis sicca (conjunctival dryness) • Xerostomia (mouth dryness)

Special stains

Substance/Organism	Stain
Collagen	» Masson's trichrome » Van Gieson
Reticular	» Silver impregnation » Gomori's silver stain
Elastic	» Verhoeff stain » Weigert's stain
Myelin sheath	» Marchi stain
Nissl granule	» Cresyl violet stain
Fungus	» Gridley » Lactophenol cotton blue
Haemosiderin/Iron	» Pearls Prussian blue
Amyloid	» Congo red » Iodine
Uric acid	» De Galantha
Fat	» Sudan IV » Oil red O » Osmic acid
Calcium	» Van kossa
Mucin	» Mucicarmine
Glycogen	» Best carmine » PAS
Mycobacterium	» Ziehl Neelsen stain
Brucella	» Koster stain
Bacillus	» Mcfadyean stain

Inflammation related terminology

Terminology	Organ	Terminology	Organ
Cheilitis	Lips	Polioencephalitis	Grey matter of brain
Gingivitis	Gums	Poliomyelitis	Grey matter of spinal cord
Glossitis	Tongue	Pachymeningitis	Duramater
Stomatitis	Oral mucosa	Leptomeningitis	Piamater
Gastritis	Stomach	Funiculitis	Spermatic cord
Typhlitis	Caecum	Posthitis	Prepuce
Proctitis	Rectum	Balanitis	Glans penis
Salpingitis	Oviduct/Fallopian tube	Mastitis	Mammary gland
Mammilitis	Teat canal	Metritis	Uterus
Lampas	Palate	Neuritis	Peripheral nerves
Phlebitis	Vein	Encephalitis	Brain
Oophoritis	Ovary	Myelitis	Spinal cord
Orchitis	Testis	Nephritis	Kidney
Cyclitis	Ciliary body	Pyelitis	Renal pelvis
Iridocyclitis	Iris and Ciliary body	Omphalitis	Umbilicus
Keratitis	Cornea	Omphalophlebitis	Umbilical vein
Uveitis	Choroid, Iris and Ciliary body	Pleuritis	Pleura
Blepheritis	Eyelid	Pneumonia	Lungs
Orbital cellulitis	Orbit	Rhinitis	Nasal mucosa
Conjunctivitis	Conjunctiva	Lymphangitis	Lymph vessels
Ingluvitis	Crop	Lymphadenitis	Lymph nodes
Gizzard	Ventriculitis	Folliculitis	Hair follicle
Coxitis	Hip joint	Myositis	Muscle
Arthritis	Joint	Cellulitis	Connective tissue
Omarthritis	Shoulder joint	Otitis	Ear
Laminitis	Sensitive lamina of hoof	Cholangitis	Bile duct
Gonitis	Stifle joint	Cholecystitis	Gall bladder
Cystitis	Urinary bladder	Hepatitis	Liver
Spondylitis	Vertebrae		

Hormonal disorders

Hormone	Deficiency	Overproduction (Excess)
Growth Hormone (GH)	Dwarfism (Hypopituitarism)	Gigantism: Hyperpituitarism in young ones Acromegaly: Hyperpituitarism in adults
ACTH	Addison's disease (Hypoadrenocorticalism)	Cushing's syndrome (Hyperadrenocorticalism)
Thyroxin or TSH	Cretinism: Hypothyroidism in young ones Myxedema: Hypothyroidism in adults Goitre	Grave's disease / Exophthalmic goiter / Basedow's disease (Hyperthyroidism)
Vasopressin (ADH)	Diabetes insipidus	
Insulin	Diabetes mellitus	

Fever

Swamp fever	Equine Infectious Anemia
Aphthous fever	Foot and Mouth Disease
Red water fever	Babesiosis
Catarrhal fever of sheep	Bluetongue
Malta fever	Brucellosis
Deer fly fever	Tularaemia
Shipping fever	Haemorrhagic septicaemia
Parrot fever	Psittacosis
Enteric fever	Salmonellosis
Splenic fever	Anthrax
Swine fever	Hog cholera
African swine fever	Warthog disease

Pathognomonic/Characteristic lesions of animal diseases

Disease	Lesions/Remark
Theileriasis	» Punched out ulcers in abomasum » Generalized lymphoid enlargement » Koch blue bodies in lymphocytes
Glanders	» Punched out/Star shaped ulcers in nasal septum » Thick oily discharge from nasal mucosa » Abscesses in superficial lymph nodes (Farcy) » Granulomatous nodules in the lungs
Strangles	» Metastatic abscesses in the lungs, liver, kidneys and spleen » Abscesses yield large quantities of creamy yellowish pus » Purpura haemorrhagica is a complication of strangles
Swine fever	» Button ulcers in large intestine (colon and rectum) » Turkey egg kidney » Splenic infarct
Swine erysipelas	» Diamond or rhomboid skin lesions » Cauliflower like growth in heart valves (Vegetative endocarditis)
Tetanus	» Prolapse of third eyelid » Prolonged spasmodic contractions of muscles
Anthrax	» Splenomegaly » Absence of rigor mortis » Failure of blood to clot (bcz of fibrinolysin)
Black Quarter	» Acute Gangrenous myositis » Crepitating sound » Acute fibrinous endocarditis » Mural thrombosis
Haemorrhagic septicaemia	» Warm, painful swelling of throat, dewlap, brisket and perineum » Widespread petechiae and ecchymoses on mucous and serous membranes » Oedema of the lungs and lymph nodes » Severe fibrinous bronchopneumonia
Lumpy jaw	» Suppurative rarefying osteomyelitis
Listeriosis	» Micro abscesses in the brain
Rabies	» Negri bodies (Hippocampus-Dog, Cerebellum-Cattle) » Babes nodule (collection of microglial cells) » Perivascular cuffing (lymphocytes)

PPR	» Zebra marking in large intestine » Necrotic stomatitis with diphtheritic plaques » Purulent or fibrinous bronchopneumonia
Rinderpest	» Zebra marking in large intestine » Bran like deposits in the oral mucosa » Necrotic stomatitis
Canine distemper	» Biphasic/Diphasic fever » Both intranuclear and intracytoplasmic inlusions » Extensive demyelination of neurons in CNS » Hyperkeratosis of digital pads (hard pad disease)
Infectious canine hepatitis	» Basophilic intranuclear inclusion bodies » Congestion and oedema of spleen and lymph nodes » Enlargement of liver » Thickening of gallbladder wall » "Saddle curve fever"
Blue tongue	» Intense hyperarmia of the corium and coronitis » Catarrhal stomatitis, rhinitis, enteritis, and lameness » Thrombosis, and infarction of pulmonary and coronary artery is characteristic lesion » Oedema and cyanosis of the tongue » Oedema, cyanosis, and multiple haemorrhages on the muzzle, tongue, dental pad, hard palate, gums, oesophagus, reticulum and rumen, with erosion and ulceration » Severe necrotizing encephalopathy (hydrancephaly and porencephaly) in aborted foetus » Pulmonary oedema and death from pneumonia
Foot and mouth disease	» Necrotizing myocarditis in calves (tigroid heart necrosis) » Severe mortality in young ones » Vesicular lesions in oral mucosa, lips, tongue, coronary band, vulva, teats, and udder
Johne's disease	» "Corrugations" in the intestine » Lesions mainly seen in terminal part of the ileum » Symplasma stage is seen » Lamina propria of the mucosa closely packed with epithelioid cells » Chronic granulomatous enteritis in ruminants » Chronic diarrhoea and progressive emaciation

Scrapie	» Neuronal and neuropil vacuolation » Degenerative lesions in the neurons » Pronounced hypertrophy and hyperplasia of astrocytes
Ehrlichiosis	» Severe leukopaenia, thrombocytopaenia and anaemia » Intracellular forms are » Initial bodies » Mulberry bodies or morulae » Elementary bodies » "Morula" stage is seen in monocytes and lymphocytes
Rhinosporidiosis	» Nasal polypoid granulomatous lesions
Brucellosis	» Microscopic granulomas in tissues » Extensive proliferation of organism in the chorionic epithelium and trophoblasts » Oedema and bronchopneumonia in aborted fetus

Plague

Fowl plague	Avian Influenza
Cattle plague	Rinderpest
Bubonic plague	Black death
Goat plague	Peste-des-petits-ruminants (PPR)
Swine plague	Hog cholera
Equine plague	African horse sickness
Duck plague	Duck virus enteritis
White plague	Tuberculosis
Rabbit plague	Tularaemia
Cat plague	Feline panleukopenia

Miscellaneous

Canine AIDS	Canine Ehrlichiosis
Equine AIDS	Equine Infectious Anemia
Equine distemper	Strangles
Feline distemper	Feline panleukopenia
Canine distemper	Carre's disease/Hard pad disease

Avian distemper	Ranikhet disease
Black leg	Black quarter
Black head	*Histomonas meleagridis*
Black death	Bubonic plague (*Yersinia pestis*)
Black disease	Clostridium novyi - Type B
Swine strangle	Jowl abscess

Bodies

Bodies	Disease/Condition
Bollinger bodies/Borrel bodies	Fowl pox
Joest bodies/Joest Degen bodies	Borna disease
Dohle bodies	Ribosomal Aggregates in neutrophils
Koch's blue bodies	Theileriosis
Councilman bodies	Yellow fever in man
Negri bodies	Rabies
Guarnieri bodies	Cow pox
Paschen bodies	Small pox
LCL bodies	Chlamydiosis
Mallory bodies	Alcoholic liver disease
Russell bodies	Plasma cells
Cowdry type A bodies	Herpesvirus
Cowdry type B bodies	Adenovirus
Miescher's bodies	Sarcocystosis
Leishman Donovan (LD) bodies	Leishmaniosis
Herring bodies	Pituitary
Howell-Jolly bodies	Nuclear remnants seen as single or double spherical bodies in RBCs
Heinz bodies	Refractile inclusions in RBCs seen in Phenothiazine toxicity

Poultry diseases

VIRAL		
Disease	**Causal agent**	**Remark**
Ranikhet disease (RD) Avian pneumoencephalitis Newcastle disease	Paramyxovirus (Avulavirus, Rubulavirus, APMV-1)	» Petechial hemorrhages at tip of the proventicular glands » Haemorrhages in the caecal tonsils » Button ulcers in the intestine » Splenic necrosis » Perivascular coughing in the brain » Torticollis is a common finding » Four Pathotypes: 1. Viscerotropic Velogenic (Doyle's form) 2. Neurotropic Velogenic (Beach's form) 3. Mesogenic (Beaudette's form) 4. Lentogenic (Hitchner's form) » Pathogenesis mimics avian influenza » Zoonotic, causes conjunctivitis in man
Avian influenza (AI) Bird flu Avian plague	Orthomyxovirus (Influenzavirus A)	» Myocardium haemorrhages » Oedema and hyperaemia of wattles, comb, shanks and lungs » Necrosis of spleen, liver, and kidney » Perivascular coughing in the brain
Infectious Bronchitis (IB) Gasping disease	Corona virus	» "Watery whites" (Albumen losses its viscosity) » Deterioration in egg quality » Eggs may be small, misshapen, and show corrugations in outline » Ureters distended with the urates » "Blind layers" (birds fail to lay) » Nephrotoxic IB: T, Gray and holte strain » Respiratory form: Massachusetts and Connecticut serotypes)

Infectious bursal diease (IBD) Gumboro disease Infectious bursitis "Avian nephrosis"	Birna virus	» Muscular haemorrhages (thigh and pectoral muscles) » Diffuse haemorrhages at junction of gizzard and proventriculus » Enlarged and haemorrhagic bursa » Bursal atrophy in later stages » B cells are the primary target cell » Immunosuppressive disease » Greatest susceptibility: 3-6 weeks of age » Dilatation of the tubules with urates
Infectious laryngotracheitis (ILT)	Gallid herpesvirus-1	» Pump handle respiration » Mainly affects trachea and conjunctiva » Haemorrhagic tracheitis » Conjunctivitis is common ocular lesion » Intranuclear inclusion bodies are found in the tracheal epithelium
Marek's disease (MD) Range paralysis Pearl eye Polyneuritis Neurolymphomatosis	Gallid herpesvirus-2	» Susceptible age: 6 weeks or older » Pleomorphic lymphoid cells infiltration » Thickening of sciatic nerves and brachial plexus » Sportsman posture (Paralysis of nerves) » Source of virus: feather follicle » Latent infection is seen in T cells » Diffuse lymphomatous enlargement of the liver, spleen, gonads, and kidneys » Lymphomas may be seen in skin, in association with feather follicles (skin leucosis) » MATSA: Marek's disease tumour associated surface antigen » Immunosuppressive disease

Lymphoid leucosis (LL) Big liver disease Visceral lymphoma Visceral lymphomatosis	Alpha-Retrovirus	» Susceptible age: 14 - 30 weeks of age » Great enlargement of liver by infiltrating lymphoblasts » Macroscopic tumours are present in liver, spleen, and bursa » Vertical infection occurs » Virus is produced by albumen secreting glands of the oviduct » Uniform lymphoid cells (Lymphoblasts) infiltration
Reticuloendotheliosis (RE)	Gamma-Retrovirus	» Immunosuppressive disease » Vertical transmission occur » Lymphomas of large uniform lymphoreticular cells
Chicken infectious anemia (CIA) Blue wing disease Anaemia dermatitis syndrome	Circovirus	» Aplastic anaemia » Generalized lymphoid atrophy (in Thymus, Bone marrow, Spleen, Bursa etc) » Immunosuppressive disease » Vertical transmission occur » Gangrenous dermatitis » Panmyelophthisis (wasting away of the bone marrow) » Replication: In precursor T cells of thymus and in haemocytoblasts in the bone marrow
Avian Encephalomyelitis (AE) Epidemic Tremor	Picorna virus (Enterovirus)	» Ataxia and rapid tremors are seen » Vertical transmission occur » Occurrence: 1-2 week of age » Non purulent encephalomyelitis of the dorsal root ganglia » Central chromatolysis of the neurons in the nuclei of the brain stem, particularly in the medulla oblongata » CNS and the pancreas are uniformly infected by the virus » Primary infection is seen in the alimentary tract mainly duodenum

Hydropericardium Hepatitis Syndrome (HHS) Angara disease Leechi disease	Adenovirus	» Vertical transmission occur » Viral replicates in the intestinal tract » Decreased albumin production leads to hypoproteinaemia » Presence of up to 10 ml of clear transudate in the pericardial sac gives it appearance of "Leechi"
Egg drop syndrome (EDS-76)	Adenovirus	» Thin-shelled, soft-shelled, and shell-less eggs » Major cause of loss of egg production » Sudden fall in egg production around peak production » Virus replicates in "pouch shell gland" of the oviduct » Vertical transmission occur » Inactive ovaries and atrophied oviducts
Fowl pox	Avipoxvirus	» Granular eruptions in the comb and wattle » Bollinger and Borrel bodies » Cutaneous form: lesions in non-feathered parts of the body (Dry form) » Diphtheritic form: lesions in mucous membrane of the upper respiratory tract, mouth, and oesophagus (Wet pox) » Hyperplasia of the epithelium is seen » Macule-Papule-Vesicle-Pustule and finally crust or scab (Stages of lesion)
	BACTERIAL	
Fowl cholera Avian H.S.	Pasteurella multocida	» Peracute form: death is first sign » Acute form: mucus discharge from the orifices, cyanosis, and fetid diarrhea » Petechial haemorrhages throughout the viscera » Multiple pinpoint necrotic foci in the liver

Fowl typhoid	Salmonella gallinarum	» Usually seen in growers or adult birds » Vertical transmission occur » Watery to mucoid yellow diarrhea » Intense anaemia with pale combs and wattles » Increase in dead-in-shell embryos » "Coppery bronze sheen" of liver is seen » Enlarged spleen with catarrhal enteritis » Non-motile salmonella
Pullorum disease Bacillary white diarrhea (BWD)	Salmonella pullorum	» Non-motile salmonella » Occurrence: Chicks under 3 wks of age » Vertical transmission occur » Increase in dead-in-shell embryos » White viscous and sticky droppings » Typhlitis and peritonitis » Small, white, necrotic foci in the liver, lungs and myocardium » Growers: arthritis with enlarged hocks » Adults: abnormal ovary with irregular, cystic, misshapen, discoloured and pedunculated ova
Avian spirochaetosis Borreliosis	Borrelia anserina	» Transmitted by *Argas persicus* (soft tick) » Cyanosis of comb and wattles » Greenish diarrhoea » Abrupt and marked elevation in body temperature » Paresis (partial paralysis) or paralysis » Severe anaemia and coma » Marked enlargement and "mottling" of spleen » Swollen and pale kidneys » Haemorrhage at proventriculus-ventriculus junction

Avian tuberculosis	Mycobacterium avium	» Calcification absent » Spread: mainly by infective faeces » Gross emaciation » Marked atrophy of the sternal muscles » "Knife edged keel" (prominent keel bone) » Persistent diarrhoea with soiling of tail feathers » Hopping (jerky) locomotion caused by tubercular lesions in the bone marrow » Lesions are mainly seen in liver, spleen, intestines and bone marrow » "Knobbly" spleen (irregular hard lumps)
Infectious coryza	Haemophillus paragallinarum	» Sero-mucoid nasal and ocular discharge » Subcutaneous oedema of the face and wattles (facial oedema) » Marked conjunctivitis with closed eyes » Catarrhal to fibrino-purulent inflammation of the nasal passages, and infraorbital sinus and conjunctiva

Multiple Choice Questions

1. Pneumonia caused by faulty drenching of medicine is

a. Aspiration pneumonia
b. Suppurative pneumonia
c. Intestinal pneumonia
d. Granulomatous pneumonia

2. Corrugation in large intestine along with thickening of villi is seen in

a. Anthrax
b. Tuberculosis
c. Johne's disease
d. Tetanus

3. Pink eye condition in horses is seen in

a. African horse sickness
b. Equine infectious anaemia
c. Equine infectious encephalomyelitis
d. None of the above

4. Symplasma stage in submucosa is seen in

a. Mycoplasma
b. Tuberculosis
c. Johne's disease
d. Aspergollosis

5. Intranuclear inclusion bodies in the intestinal epithelium cells and cardiac muscles are seen in

a. Canine parvovirus
b. Canine coronavirus
c. Canine distemper
d. All of the above

6. Braxy is characterized by

a. Necrotic enteritis
b. Haemorrhagic abomasitis
c. Haemorrhagic enteritis
d. All of the above

7. Edema consisting of gelatinous material in neck and brisket region in cattle is seen in

a. Black Quarter
b. Tetanus
c. Botulism
d. Haemorrhagic Septicemia

8. Both intracytoplasmic and intranuclear inclusions are present in

a. Rabies b. Pox
c. Canine distemper d. ICH

9. "Blue eye" condition in dog is seen in

a. Infectious canine hepatitis
b. Canine distemper
c. Leptospirosis
d. All of the above

10. Oedema factor play an important role in pathogenesis of

a. Botulism b. Anthrax
c. Listeriosis d. Streptococcosis

11. Visna/Maedi commonly occurs in

a. Goat b. Sheep
c. Cattle d. Swine

12. Rectal pinch test is used for diagnosis of

a. Pearl disease
b. Johne's disease
c. Brucellosis
d. Actinobacillosis

13. Toxins released by *Cl. tetani* is

a. Tetanospasmin
b. Tetanolysin
c. Non-spasmogenic toxin
d. All of the above

14. Anthrax mainly occur in

a. Rainy season b. Winter
c. Summer d. Spring

15. Most common site for diagnosis of Johnes's disease is

a. Rectum b. Terminal ileum
c. Terminal colon d. Terminal jejunum

16. LCL bodies are found in

a. Theileriosis b. Leptospirosis
c. Babesiosis d. Chlamydiosis

17. "Elementary bodies" in faeces and respiratory excretions are found in
a. Theileriosis
b. Leptospirosis
c. Babesiosis
d. Chlamydiosis

18. "Lumpy Jaw" is caused by
a. *Actinomyces bovis*
b. *Actinobacillus lignieresii*
c. *Nocardia spp.*
d. *Sporotricum spp.*

19. Congenital absence of posterior limbs is called
a. Abrachia b. Amelia
c. Apodia d. Micromelia

20. Dilatation of bronchial lumen is called
a. Atelectasis b. Bronchistenosis
c. Bronchiectasis d. Emphysema

21. Female calf with arrested development of sex organs and being the twin of perfect male is called
a. Freemartin
b. White heifer disease
c. Hermaphrodite
d. Pseudohermaphrodite

22. Pneumonia caused by parasite is called
a. Verminous pneumonia
b. Bronchopneumonia
c. Mycotic pneumonia
d. All of the above

23. Localized dilatation of artery, vein or cardiac chamber is called
a. Arteriosclerosis
b. Atherosclerosis
c. Aneurysm
d. Arteriolosclerosis

24. Hallmark of healing is
a. Proud Flesh
b. Keloid
c. Haematoma
d. Granulation tissue

25. Adhesive glycoproteins of extra-cellular matrix
a. Fibronectin and Laminins
b. Selectins and Integrins
c. ICAM and PECAM
d. All of the above

26. Cardiac sclerosis or cardiac cirrhosis is seen in
a. Chronic Local Passive hyperemia
b. Chronic General Passive hyperemia
c. Acute Local Active hyperemia
d. Acute general Active hyperemia

27. Conversion from less specialized cell type to more specialized cell type is called
a. Dysplasia b. Metaplasia
c. Anaplasia d. Hyperplasia

28. Reed Sternberg cells are found in
a. Hodgkin's disease
b. Xanthomas
c. Crigler-Najjar syndrome
d. All of the above

29. Most reactive free radical in inducing cell damage is
a. Hydroxyl
b. Nitric oxide (NO)
c. Superoxide
d. All of the above

30. Entry and progress of cells through the cell cycle are controlled by
a. Integrins b. Cyclins
c. Fibronectins d. Laminins

31. Series of retrogressive changes in the nerve cell is known as
a. Wallerian degeneration
b. Zenker degeneration
c. Hyaline degeneration
d. Satellitosis

32. Eosinophilic, intracytoplasmic inclusion seen in liver of patients suffering from alcoholic liver disease is
a. Councilman body b. Mallory body
c. Borna body d. Bollinger body

33. Nutmeg liver and brown induration of lungs are seen in

a. Chronic local passive hyperemia
b. Chronic general passive hyperemia
c. Acute local active hyperemia
d. Acute general active hyperemia

34. Macrophages laden with lipids seen in atherosclerosis are called

a. Foam cells
b. Gitter cells
c. Heart failure cells
d. Hertega cells

35. Pigment responsible for 'Brown Atrophy' is

a. Melanin
b. Lipofuscin
c. Hemosiderin and bilirubin
d. All of the above

36. Aggregates of ferritin micelles are called

a. Lipofuscin
b. Hemosiderin
c. Apoferritin
d. Biliverdin

37. Heart failure cells are found in

a. Lung
b. Heart
c. Liver
d. Kidney

38. Hyperkeratosis in cattle is common in

a. Phenol poisoning
b. Carbon tetra chloride poisoning
c. Chlorinated naphthalene poisoning
d. All of the above

39. Type of necrosis seen in hypoxic cell death is

a. Caseative
b. Liquifactive
c. Fat necrosis
d. Coagulative

40. Enzymes important in apoptosis are

a. Caspases
b. Lipases
c. Aromatases
d. Sulphydryl hydroxylases

41. Ketogenic fatty acids in ruminant are

a. Acetic acid and Butyric acid
b. Butyric acid and Propionic acid
c. Acetic acid and Propionic acid
d. Propionic acid, Acetic acid and Butyric acid

42. Post-Mortem clotting of blood doesn't occur in

a. Anthrax
b. Tetanus
c. Sweet clover poisoning
d. Both a and c

43. Special stain for demonstration of calcium in tissues is

a. Congo red
b. Von Kossa stain
c. Prussian blue reaction
d. De Galantha stain

44. Heart failure cells are

a. Alveolar macrophage laden with hemosiderin
b. Hepatic macrophage laden with hemosiderin
c. Alveolar macrophage laden with lipids
d. None of the above

45. 'Tophi' is related to

a. Visceral gout
b. Articular gout
c. Jaundice
d. Both a and b

46. Anaphylatoxins are

a. C3a
b. C4a
c. C5a
d. All of the above

47. Type of necrosis involved in hypoxic cell death of brain tissue is

a. Caseative
b. Liquifactive
c. Fat necrosis
d. Coagulative

48. Common term for deposition of exogenous substances in the body is

a. Anthracosis
b. Plumbism
c. Siderosis
d. Pneumoconiosis

49. Opsonins are

a. Fc portion of IgG
b. C3b fragment of complement
c. Collectins
d. All of the above

50. "Triple response" in tissue inflammation was formulated by

a. Thomas Lewis
b. Rudolf Virchow
c. Galen
d. Johnson

51. Slow reacting substances (SRS-A) of anaphylaxis are

a. Leukotriene C4 b. Leukotriene D4
c. Leukotriene E4 d. All of the above

52. Cationic proteins produced by eosinophil toxic to parasites are

a. Major alkaline proteins
b. Major basic proteins
c. Chaperons
d. All of the above

53. Thromboxane A causes

a. Vasodilation b. Vasoconstriction
c. Platelet aggregation d. Both b and c

54. Fever is caused by

a. $PGF_{2\alpha}$ b. PGG_2
c. PGE_2 d. PGI_2

55. Lipotropic factors are

a. Serine and choline
b. Choline and methionine
c. Serine and methionine
d. Methionine and glycine

56. Suppurative inflammation of hair follicles or sebaceous glands caused by *Staphylococcus aureus* is called

a. Cabuncle b. Cellulitis
c. Folliculitis d. Boil or furuncle

57. Diffuse spreading suppurative inflammation of connective tissues is called

a. Cabuncle b. Cellulitis
c. Folliculitis d. Boil

58. Modified macrophages in granuloma are called

a. Goblet cells b. Giant cells
c. Granulocytes d. Epitheloid cells

59. An alteration that indicates the cause of a particular disease without doubt is called

a. Specific lesion
b. Morbid lesion
c. PM lesion
d. Pathognomonic lesion

60. Large granules of neutrophils are also called as

a. Primary granules
b. Azurophil granules
c. Non Specific granules
d. All of the above

61. Myeloperoxidase enzyme is present in

a. Azurophil granules of neutrophils
b. Specific granules of neutrophils
c. Secondary granules of neutrophils
d. Macrophages

62. Membrane attack complex is

a. C5b6789 b. C4b2b3b
c. $C5b678(9)_n$ d. C4b2b

63. E-selectins are present on

a. Platelets
b. Leucocytes
c. Endothelium
d. All of the above

64. Phagocytic cells of the body are

a. Macrophages and lymphocytes
b. Macrophages and neutrophils
c. Neutrophils and lymphocytes
d. Macrophages and plasma cells

65. L-selectins are present on

a. Platelets
b. Leucocytes
c. Endothelium
d. All of the above

66. P-selectins are present on

a. Platelets b. Leucocytes
c. Endothelium d. Both a and c

67. Integrins are present on

a. Platelets b. Leucocytes
c. Endothelium d. Both a and c

68. Weibel-Palade bodies are found in

a. Platelets
b. Leucocytes
c. Endothelial cells
d. Both a and c

69. Predisposing factors are also known as
a. Intrinsic or endogenous causes
b. Extrinsic or exogenous causes
c. Both a and b
d. All of the above

70. In viral infections the first cells to arrive is
a. Macrophages b. Lymphocytes
c. Basophils d. Neutrophils

71. Chemotaxis can be demonstrated by
a. Colloid carbon Technique
b. Boyden's micropore filter technique
c. Hitchner's filter technique
d. All of the above

72. Sequential steps involved in the phagocytosis are
a. Recognition, attachment, engulfment, killing and degradation
b. Attachment, recognition, engulfment, killing and degradation
c. Attachment, engulfment, recognition, killing and degradation
d. Engulfment, Attachment, recognition, killing and degradation

73. Tumours are commonly observed in
a. Younger animals
b. Older animals
c. Prepubertal animal
d. No relation with age

74. Strangles is a disease of
a. Younger animals
b. Older animals
c. Prepubertal animal
d. No relation with age

75. Caecal coccidiosis is a disease of
a. Young birds
b. Old birds
c. Layers
d. No relation with age

76. Concentration of calcium ions outside the cell is
a. 1,000 times higher than that inside
b. 10,000 times higher than that inside
c. 10,000 times lower than that inside
d. 1,000 times lower than that inside

77. Glucogenic fatty acid is
a. Acetic aced
b. Butyric acid
c. Propionic acid
d. None of the above

78. Hypoxia affects
a. Cells aerobic respiration
b. Cells anaerobic respiration
c. Both a and b
d. Does not affect respiration

79. Which statement is incorrect?
a. Ischaemia is a loss of blood supply due to obstructed blood flow
b. In hypoxia glycolytic energy production can continue
c. Ischaemia injures tissues faster than hypoxia
d. Hypoxia injures tissues faster than ischaemia

80. Myeloperoxidase-dependent killing is seen in
a. Monocytes b. Neutrophils
c. Basophils d. Both a and b

81. Defensins are
a. Cationic arginine-rich granules that are cytotoxic to bacteria
b. Anionic arginine-rich granules that are cytotoxic to bacteria
c. Cationic arginine-rich granules that are cytotoxic to Parasites
d. Anionic arginine-rich granules that are cytotoxic to Parasites

82. HO-MPO Halide system is found in
a. Macrophages b. Lymphocytes
c. Basophils d. Neutrophils

83. Most tolerant cell for ischaemia is
a. Fibroblasts, epidermis and skeletal muscles
b. Cardiac muscle
c. Neurons
d. Hepatocytes and renal epithelium

84. Least tolerant cell for ischaemia is
a. Fibroblasts, epidermis and skeletal muscles
b. Cardiac muscle
c. Neurons
d. Hepatocytes and renal epithelium

85. End product of protein metabolism excreted by bird in urine is

a. Urea b. Uric acid
c. Ammonia d. All of the above

86. Hydrogen peroxide is decomposed by

a. Spontaneously
b. Superoxide dismutase (SOD)
c. Catalase
d. Both a and b

87. Protection against injury by catalyzing free radicals is provided by

a. Glutathione peroxidase (GSH-Px)
b. Vitamin E
c. Selenium
d. All of the above

88. Fenton reaction is associated with

a. Production of hydroxyl radicals
b. Production of NO
c. Production of superoxide
d. All of the above

89. Most of the intracellular free iron is present in

a. Ferric (Fe^{+++}) form
b. Ferrous (Fe^{++}) form
c. Both a and b
d. None of the above

90. Which free radical is present in gaseous form?

a. Hydroxyl
b. Nitric oxide (NO)
c. Superoxide
d. All of the above

91. Nitric oxide (NO) is produced by

a. Endothelial cells
b. Macrophages
c. Neurons
d. All of the above

92. Free radical reacts with which nitrogenous base of DNA

a. Adenine b. Thymine
c. Guanine d. Cytocine

93. Normal range of neutrophils in cattle blood is

a. 25-40% b. 50-65%
c. 15-25% d. 70-85%

94. Escape of blood from a vessel is called

a. Haemorrhage b. Haematoma
c. Both a and b d. Haemangioma

95. Acute local passive hyperaemia is observed in

a. Intussusception
b. Volvulus
c. External pressure from ligatures and tourniquets
d. All of the above

96. Cellular swelling is also known as

a. Cloudy swelling
b. Albuminous degeneration
c. Parenchymatous degeneration
d. All of the above

97. Most common disturbance of cell metabolism is

a. Hyaline degeneration
b. Cellular swelling
c. Hydropic degeneration
d. Amyloid

98. First reaction of a cell to injury is

a. Hyaline degeneration
b. Amyloid
c. Hydropic degeneration
d. Cellular swelling

99. Which of the following is caused by the mildest irritants?

a. Cellular swelling
b. Amyloid
c. Hydropic degeneration
d. Hyaline degeneration

100. Lysosomes containing a variety of hydrolytic enzymes are called

a. Primary lysosomes
b. Secondary lysosomes
c. Tertiary lysosomes
d. Residual Body

101. Lysosomes containing material meant for digestion are called

a. Primary lysosomes
b. Secondary lysosomes or phagolysosomes
c. Tertiary lysosomes
d. Residual Body

102. Purpura is

a. Haemorrhages up to approximately 3-5 mm in size
b. Large and blotchy haemorrhages
c. Pin point haemorrhages
d. Blood enclosed within a tissue

103. When materials from external environment are taken up by lysosomes this mechanism is called

a. Autophagy b. Heterophagy
c. Coprophagy d. Both a and b

104. Uptake of particulate matter or solid material is called

a. Phagocytosis b. Pinocytosis
c. Autophagy d. Both a and b

105. Uptake of soluble macromolecules is called

a. Phagocytosis b. Pinocytosis
c. Autophagy d. Both a and b

106. Phenomenon involved in the removal of damaged or senescent (old) intracellular organelles is called

a. Autophagy b. Heterophagy
c. Coprophagy d. Both a and b

107. Lysosomes with undigested debris within the cells are called

a. Primary Lysosomes
b. Secondary lysosomes
c. Phagolysosome
d. Residual Body

108. The cytoskeleton consists of

a. Actin and myosin filaments
b. Microtubules
c. Intermediate filaments
d. All of the above

109. Proteins formed during stress after injurious stimuli are called

a. Heat shock proteins (HSPs) or chaperons
b. Wear and tear Proteins
c. Laminin
d. Fibronectin

110. Which statement is not true about HSP?

a. HSPs are also called chaperones
b. HSPs help in proper folding of proteins
c. HSPs has important role in protein kinesis
d. HSP are always induced by cellular stress

111. Which statement is not true?

a. Re-folding of the damaged proteins to restore their function is done by HSP
b. Permanently damaged proteins are bound to the ubiquitin HSP molecule
c. Ubiquitin binding helps in destruction damaged proteins by proteasomes
d. HSPs helps in destruction of normal proteins by proteasomes

112. Large and blotchy haemorrhages are called

a. Petechiae b. Purpura
c. Ecchymoses d. Haematoma

113. Abnormal accumulation of neutral fat (triglycerides) within parenchymal cells is called

a. Fatty Change b. Obesity
c. Lipomatosis d. Cirrhosis

114. Accumulation of blood enclosed within a tissue is referred as

a. Petechiae
b. Purpura
c. Ecchymoses
d. Haematoma or Haematocyst

115. Colour of normal fat in cattle is

a. White b. Yellow
c. Orange d. Green

116. Colour of normal fat in horse is

a. White b. Yellow
c. Orange d. Green

117. "Thrush breast heart" or "tigered heart" is seen in

a. Fatty change b. Amyloid
c. Hyaline change d. Necrosis

118. For fat identification, sections should be prepared

a. Frozen
b. In formalin
c. In paraffin
d. In alcohol

119. Heat shock protein (HSP) induced by cellular stress are

a. HSP 60 b. HSP 70
c. HSP 90 d. Both a and c

120. Stain used to demonstrate fat in tissue is

a. Oil red-O
b. Osmic acid
c. Sudan IV
d. All of the above

121. Excessive accumulation of fat in the body is known as

a. Adiposity b. Obesity
c. Lipomatosis d. All of the above

122. Which statement is not true?

a. One gram of fat provides nine calories
b. One gram of carbohydrate provides four calories
c. One gram of protein provides seven calories
d. One gram of protein provides four calories

123. Macrophages filled with minute vacuoles of lipids that impart foaminess to their cytoplasm are called

a. Foam cells
b. Gitter cells
c. Heart failure cells
d. Hertega cells

124. State of unresponsiveness towards an antigen is called

a. Atopy b. Hypersensitivity
c. Anergy d. Tolerance

125. Diffuse, flat and often irregular areas of bleeding are termed as

a. Ecchymoses b. Suffusions
c. Extravasations d. Haemangiomas

126. Stages of cell injury are

a. Adaptation, reversible injury, irreversible injury, and cell death
b. Reversible injury, irreversible injury, Adaptation and cell death
c. Adaptation, irreversible injury, and cell death
d. Reversible injury, irreversible injury, and cell death

127. Melanosarcomas are very common in

a. Brown horses
b. Grey and white horses
c. Black horses
d. All of the above

128. Localized accumulation of macrophages laden with cholesterol in form of tumourous masses in the skin is called

a. Keloid b. Melanoma
c. Xanthoma d. Proud flesh

129. Russell bodies are found in

a. Eosinophils b. Helper T cells
c. Heterophils d. Plasma cells

130. Only carbohydrate that can be seen under the microscope is

a. Glucose b. Glycogen
c. Fructose d. Maltose

131. To demonstrate glycogen, tissues must be fixed in

a. Xylene
b. Absolute alcohol (Methyl Alcohol)
c. Formalin
d. Aqueous fixatives

132. Special stain for glycogen is

a. Iodine
b. Best's carmine
c. Periodic acid-Schiff
d. All of the above

133. Endogenous pigments include

a. Melanin
b. Lipofuscin
c. Hemosiderin and bilirubin
d. All of the above

134. The most common exogenous pigment is

a. Carbon or coal dust
b. Silica
c. Iron
d. Lead

135. Which statement is not correct?

a. Melanin is a brown-black pigment formed by melanocytes
b. Oxidation of tyrosine by tyrosinase forms Melanin
c. Melanocytes are present in the basal layer of the epidermis
d. Melanin is present in huge amount in Negroes

136. Melanin protects the skin against

a. X rays
b. Cosmic rays
c. Ultraviolet rays
d. All of the above

137. The reaction used to determine the presence of tyrosinase in the skin or other tissues is

a. Fanton reaction
b. Dopa reaction
c. Robertson reaction
d. None of the above

138. A condition in which focal areas of pigment are found in the intestine, heart, lungs, kidneys, and other organs is known as

a. Porphyra
b. Pseudomelanosis
c. Melanosis
d. Vitiligo

139. Complete absence of melanin within an individual is called

a. Leukoderma
b. Albinism
c. Melanosis
d. Vitiligo

140. Partial or complete loss of melanocytes in the epidermis is called

a. Leukoderma
b. Albinism
c. Melanosis
d. Vitiligo

141. Local loss of the pigment is called

a. Leukoderma
b. Albinism
c. Melanosis
d. Vitiligo

142. Lipofuscin is also known as

a. Lipochrome
b. Wear-and-tear pigment
c. Aging pigment
d. All of the above

143. Residual bodies represent

a. Lipofuscin
b. Macrophages
c. Bilirubin
d. Biliverdin

144. Petechiae or ecchymoses arising in association with the death struggle are called

a. Ecchymoses
b. Suffusions
c. Extravasations
d. Agonal haemorrhages

145. In cells, iron is normally stored in association with a protein called

a. Ferritin
b. Apoferritin
c. Hemosiderin
d. None of the above

146. Extreme accumulation of iron in a disease is called

a. Hemosiderosis
b. Haemochromatosis
c. Porphyria
d. Jaundice

147. Crigler-Najjar syndrome is caused because of

a. Acquired deficiency of biliverdin reductase
b. Acquired deficiency of glucuronosyl transferase
c. Acquired deficiency of biliverdin oxidase
d. Acquired deficiency of superoxide dismutase

148. Haemosiderin can be identified by

a. Congo red
b. Von Kossa stain
c. Prussian blue reaction
d. De Galantha stain

149. Which statement is not true?
a. Bilirubin contains no iron
b. Bilirubin is the major pigment of bile
c. In birds jaundice is because of bilirubin
d. Bilirubin is derived from haemoglobin

150. 'Wire loop' lesions in the glomerular basement membrane seen in
a. DLE
b. SLE
c. Rheumatoid arthritis
d. Pemphigus

151. Birds secrete only biliverdin because
a. They lack biliverdin oxidase
b. They lack biliverdin reductase
c. Both a and b
d. None of the above

152. Which statement is not true?
a. Unconjugated bilirubin is not soluble in water
b. Unconjugated bilirubin bounds tightly to serum albumin
c. Unconjugated bilirubin is also called direct bilirubin
d. Unconjugated bilirubin cannot be excreted in the urine in jaundice

153. Yellow discoloration of skin and sclerae that occurs when bilirubin is increased in blood
a. Hemosiderosis
b. Haemochromatosis
c. Porphyria
d. Jaundice

154. Jaundice occurs when bilirubin levels rise above
a. 2.0 mg/dL
b. 0.5 -1.0 mg/ dL
c. mg/ dL
d. 0.5 mg/ dL

155. Haemolytic Jaundice is also known as
a. Prehepatic Jaundice
b. Unconjugated hyperbilirubinaemia
c. Acholuric jaundice
d. All of the above

156. Gilbert's syndrome is caused because of
a. Acquired deficiency of glucuronosyl transferase
b. Acquired deficiency of biliverdin reductase
c. Acquired deficiency of biliverdin oxidase
d. Acquired deficiency of superoxide dismutase

157. In Icterus index the colour of plasma or serum is compared with the colour of standard solution of
a. Potassiun Permangnate
b. Potassium dichromate
c. Potassium ferro Cyanide
d. Bilirubin

158. Hydropic change mainly occurs in which layer of epidermis
a. Prickle cell layer
b. Malphigian layer
c. Basal cell layer
d. Stratum corneum

159. Chemically mucin is a
a. Phospholipid b. Glycoprotein
c. Carbohydrate d. Cholesterol

160. Mucin can be stained by
a. Periodic acid-Schiff
b. Thionin
c. Mucicarmine
d. All of the above

161. Alteration which gives the tissue a homogeneous, glassy and translucent appearance is called
a. Hyaline degeneration
b. Amyloid
c. Hydropic degeneration
d. Cellular swelling

162. Hyaline is composed of
a. Phospholipid b. Protein
c. Carbohydrate d. Cholesterol

163. Example of keratohyalin is
a. Stratum corneum
b. Corns, calluses, wart and bunions
c. Epithelial pearls in squamous-cell carcinoma
d. All of the above

164. Cellular hyaline is found in
a. Mammary glands as Corpora amylacea
b. Ventricles of the brain and central canal of the spinal as 'brain sand'
c. Islets of Langerhans in individuals having diabetes
d. All of the above

165. Connective tissue hyaline is observed in
a. Old scars
b. Degenerating stroma of tumours
c. The renal glomeruli in chronic nephritis
d. All of the above

166. Study of tumors is called as
a. Etiology
b. Oncology
c. Pathology
d. None of the above

167. Most resistant cell against irritants is
a. Hepatic cell
b. Renal cell
c. Fibroblast
d. Brain cell

168. Pox and FMD are characterized by
a. Paranchymatous degeneration
b. Hyaline degeneration
c. Amyloid degeneration
d. Hydropic degeneration

169. Amyloid degeneration is common in
a. Cattle and swine
b. Swine and poultry
c. Dog and swine
d. Dog and horse

170. Focal infiltration of amyloid in spleen is called as
a. Bacon spleen
b. Sago spleen
c. Lardaceous spleen
d. None of the above

171. Gout is observed in
a. Vitamin A deficiency
b. Vitamin C deficiency
c. Vitamin D deficiency
d. Vitamin K deficiency

172. Most common cause of visceral gout in poultry is
a. Dehydration
b. Urea feeding
c. Excess calcium Feeding
d. High protein Diet

173. Ketone bodies can be demonstrated in urine by
a. Hunter test
b. Rothera test
c. Benedict test
d. Roberts test

174. Necrosis in which cellular details are lost but architectural details are preserved is called
a. Caseative necrosis
b. Liquifactive necrosis
c. Fat necrosis
d. Coagulative necrosis

175. Which statement is not correct?
a. In moist gangrene demarcation between live and dead tissue is present
b. In dry gangrene demarcation between live and dead tissue is present
c. Gas gangrene is mainly caused by anaerobes
d. Moist gangrene is observed in internal organ

176. Chemical mediator present only in mast cell of rat and mouse is
a. 5-HT
b. Histamine
c. Kinin
d. Globulin permeability factor

177. Microphages of Metchinkoff are
a. Macrophages
b. Lymphocytes
c. Basophils
d. Neutrophils

178. Phagocytic activity is not found in
a. Macrophages
b. Monocytes
c. Neutrophils
d. Eosinophils

179. The exudate is composed of
a. Irritant, injured tissue, leukocytes, plasma constituents
b. Irritant, injured tissue, leukocytes, plasma constituents and RBC
c. Irritant, Platelets, leukocytes, plasma constituents and RBC
d. Irritant, injured tissue, leukocytes, plasma constituents and platelets

180. Which sentence is incorrect regarding plasma cell?
a. They are non-phagocytic
b. They possess cart wheel shape nucleus
c. Present in blood and tissue both
d. Present in tissue only

181. Croupous and diphtheritic membrane are characteristic of
a. Catarrhal inflammation
b. Serous inflammation
c. Fibrinous inflammation
d. Suppurative inflammation

182. Serum of ..... is rich in antienzyme
a. Fowl b. Hamster
c. Guinea pig d. Rabbit

183. Which statement is not true about avian inflammation?
a. Chicken monocyte, basophils and thrombocytes are phagocytic
b. Eosinophils in the chicken are not commonly found in allergic and parasitic inflammation
c. Giant cells are absent
d. Avian heterophil lacks myeloperoxidase

184. Labile cells are
a. Fibroblast
b. Nerve cells
c. Muscle cells
d. Epidermal cells

185. Feature of viral inflammation is
a. Presence of lymphocytes
b. Presence of neutrophils
c. Suppuration
d. Granuloma formation

186. Lysis of dead tissue by enzymes derived from inflammatory leucocytes is called as
a. Autolysis
b. Chromatolysis
c. Heterolysis
d. None of the above

187. Small round cells of chronic inflammation are
a. Lymphocyte and macrophage
b. Neutrophil and plasma cells
c. Macrophage and plasma cells
d. Lymphocyte and plasma cells

188. Which of the following regenerates by fibrous tissue proliferation?
a. Smooth muscle
b. Skeletal muscle
c. Cardiac muscle
d. None of the above

189. Acute general active hyperaemia is observed in
a. Pasteurellosis
b. Swine erysipelas
c. Rabies
d. Both a and b

190. Acute general passive hyperaemia is observed in
a. Pulmonary thrombosis and embolism
b. Hydropericardium, haemopericardium, or pyopericardium
c. Sudden myocardial accidents
d. All of the above

191. Which is necessary in diet for early wound healing?
a. Mn b. Mg
c. Cu d. Zn

192. In chronic venous congestion lungs are affected in
a. Left-sided heart failure
b. Right-sided heart failure
c. Both a and b
d. None of the above

193. Local deficiency of arterial blood in an organ is called as
a. Hyperemia
b. Congestion
c. Ischemia
d. Induration

194. Chronic general passive hyperaemia (congestion) is observed in
a. Stenosis of a valvular opening
b. Valvular insufficiency
c. Heart failure
d. All of the above

195. In chronic venous congestion liver is affected in
a. Left-sided heart failure
b. Right-sided heart failure
c. Both a and b
d. None of the above

196. "Brown induration" of the lung is seen in
a. Left-sided heart failure
b. Right-sided heart failure
c. Both a and b
d. None of the above

197. When occlusive thrombi develop a passage through which partial blood supply is maintained, is called as
a. Laminated thrombi
b. Saddle thrombi
c. Canalized thrombi
d. Propagating thrombi

198. Reversible change in which one adult cell type is replaced by another cell type is called
a. Metaplasia
b. Dysplasia
c. Hyperplasia
d. Anaplasia

199. Various diseases of immunity are
a. Hypersensitivity reactions
b. Autoimmune diseases
c. Immunodeficiency diseases
d. All of the above

200. Thrombi at bifurcation of an artery is called as
a. Laminated thrombi
b. Saddle thrombi
c. Canalized thrombi
d. Propagating thrombi

201. "Nutmeg pattern" of liver is seen in
a. Left-sided heart failure
b. Right-sided heart failure
c. Both a and b
d. None of the above

202. Arterial thrombi is seen in
a. *Strongylus vulgaris* infection
b. *Spirocerca lupi* infection
c. *Onchocerca armillata* infection
d. All of the above

203. Which of the following statement is true?
a. Lines of zahn is seen in post-mortem clot
b. Post mortem clot is friable, dry and crumbles when pressed
c. Surface of thrombus is smooth and glistening
d. Thrombus is firmly attached to endothelium and may fill the vessel

204. Increased vascular permeability is produced by
a. Histamine b. Bradykinin
c. Leukotrienes d. All of the above

205. A type of mixed thrombus composed of alternating layers of pale and red thrombus is called
a. Laminated thrombi
b. Saddle thrombi
c. Canalized thrombi
d. Propagating thrombi

206. Haemolytic jaundice is seen in
a. Cholelithiasis
b. Babesiosis
c. Rabies
d. Infectious canine hepatitis

207. Circumscribed cavity in the epidermis containing pus is
a. Boil b. Fistula
c. Pustule d. Sinus

208. Suppuration is not seen commonly in

a. Fowl b. Mice
c. Guinea pig d. Rabbit

209. Emboli are rarely observed in

a. Veins
b. Arteries
c. Capillaries
d. None of the above

210. A pale or white thrombus is mainly composed of

a. RBC
b. Fibrin
c. Platelets
d. All of the above

211. Ion present in high concentration in extra cellular fluid is

a. Potassium
b. Bicarbonate
c. Sodium
d. None of the above

212. Process of brief, loose sticking of leukocytes to the endothelium is called as

a. Margination b. Adhesion
c. Pavementation d. Rolling

213. Firm sticking of leukocytes to the endothelium is

a. Margination b. Adhesion
c. Pavmentation d. Rolling

214. In automobile accident resulting in crushing injury to the bones which type of emboli most likely to occur in circulation

a. Air emboli
b. Paradoxical emboli
c. Fat emboli
d. Saddle emboli

215. The emboli that passes directly into the left auricle from the right auricle through a patent foramen ovale, is called

a. Amniotic emboli
b. Paradoxical emboli
c. Air emboli
d. Fat emboli

216. Infracts of brain will produce

a. Apoplectic cyst b. Dentigerous cyst
c. Hydatid cyst d. All of the above

217. Appearance of fresh blood in stools is called as

a. Melana b. Hematuria
c. Haematochazia d. Hemophilia

218. Lining of endothelium by white cells in inflammation is

a. Margination b. Adhesion
c. Pavmentation d. Rolling

219. Which is not a cause of edema?

a. Increase in hydrostatic pressure of blood
b. Increase in osmotic pressure of blood
c. Obstruction of lymph vessels
d. Increase permeability of capillary endothelium

220. Traumatic or surgical shock is

a. Cardiogenic b. Neurogenic
c. Haemolytic d. None of the above

221. Most radiosensitive organ is

a. Liver b. Bone
c. Brain d. Bone marrow

222. Calcification which is due to necrosis or degeneration of cells with normal calcium level of blood is called

a. Metastatic calcification
b. Dystrophic calcification
c. Pathological calcification
d. None of the above

223. Most common cause of cloudy swelling

a. Hypoxia
b. Alteration in the physical state of the protein
c. Toxins
d. None of the above

224. "Ground glass" appearance of the cytoplasm of cell seen in

a. Cloudy swelling
b. Amyloid degeneration
c. Fatty change
d. All of the above

225. Common example of hyaline degeneration is

a. Zenker's degeneration of muscle
b. Equine azoturia
c. White muscle disease of calves
d. All of the above

226. An infarct is an area of

a. Hypoxia
b. Ischaemic necrosis
c. Haemorrhage
d. Gangrene

227. Indirect Van den Bergh reaction is seen in

a. Hemolytic jaundice
b. Obstructive jaundice
c. Toxic jaundice
d. None of the above

228. Large quantity of hemosiderin is deposited in liver and kidneys in

a. Babesiosis
b. Leptospirosis
c. Equine infectious anemia
d. Cyanide Poisoning

229. "Caisson disease" or "Bends" may lead to

a. Air emboli
b. Fat emboli
c. Septic emboli
d. Thromboemboli

230. The oedema fluid is

a. Non-inflammatory
b. Low in protein and other colloids
c. Has specific gravity below 1.012
d. All of the above

231. Deposition of amyloid in neoplastic form in the heart is called

a. Sago spleen
b. Amyloidoma
c. Bacon spleen
d. None of the above

232. Common cause of infarction is

a. Thrombi
b. Emboli
c. Hypoxia
d. Both a and b

233. Tuberculosis is the example of

a. Coagulative necrosis
b. Caseative necrosis
c. Fat necrosis
d. Liquefactive necrosis

234. Example of liquefactive necrosis is

a. White muscle disease
b. Tuberculosis
c. Abscess
d. Adipose tissue trauma

235. Liquefactive necrosis is commonly seen in

a. Kidney
b. Intestine
c. Lung
d. Brain

236. Death of tissues with putrefaction by saprophytic bacteria is called

a. Autolysis
b. Gangrene
c. Autopsy
d. Necrosis

237. Zenkers degeneration in "Stiff lamb disease" is an example of

a. Epithelial hyaline
b. Connective tissue hyaline
c. Muscle hyaline
d. Myxomatous degeneration

238. Charcot-Leydon crystals seen in sputum of man in asthma are derived from

a. Erythrocyte
b. Neutrophils
c. Eosinophils
d. Macrophages

239. Example of the foreign-body giant cell is

a. Langhans' giant cell of tuberculosis
b. Giant cell of Johne's disease,
c. Giant cell of actinomycosis and blastomycosis
d. All of the above

240. Giant cells having characteristic ring of nuclei at the periphery are

a. Touton giant cells of xanthomas
b. Langhan's giant cell of T.B
c. Reed-Sternberg cell of Hodgkin's disease
d. Tumor giant cells

241. Vitamin which plays an important role in wound healing is

a. Vitamin A b. Vitamin C
c. Vitamin D d. Vitamin K

242. Drugs like penicillin interferes with wound healing by

a. Preventing synthesis of hyaluronic acid
b. Preventing collagen cross linking
c. Preventing angiogenesis
d. Preventing protein synthesis

243. Which chemical mediator of inflammation is known as "endogenous pyrogen"

a. $PGF_{2\alpha}$ b. PGG_2
c. PGE_2 d. PGI_2

244. Colloidal carbon technique is used in identification of

a. Anthracosis in the liver
b. Anthracosis in the lung
c. Leaking vessels in inflammation
d. None of the above

245. First line of defense in tumour and viral infection is

a. Macrophage
b. Neutrophil
c. NK cell
d. None of the above

246. Hyperkeratosis is an example of

a. Connective tissue hyaline
b. Epithelial hyaline
c. Muscle hyaline
d. All of the above

247. Type of inflammation seen in Tuberculosis is

a. Fibrinous b. Haemorrhagic
c. Granulomatous d. Suppurative

248. Absence of which enzyme predisposes birds for gout is

a. Protease b. Urease
c. Uricase d. Lipase

249. Alteration in the size, shape and orientation of adult cells is called

a. Anaplasia b. Aplasia
c. Metapalsia d. Dysplasia

250. Scavenger cells are

a. Lymphocyte b. Basophils
c. Eosinophils d. Macrophages

251. Condensation of chromatin leading to small round nucleus is

a. Pyknosis b. Karyorrhaxis
c. Karyolysis d. Karyoschisis

252. Important pyrogen producing cell is

a. Eosinophil b. Neutrophil
c. Plasma cell d. Lymphocyte

253. Hydropic degeneration is closely related to

a. Hyaline degeneration
b. Cloudy swelling
c. Mucous degeneration
d. Amyloid degeneration

254. Cytokines secreted by Th cells are

a. IL-2 b. IFN-gamma
c. IL-1 d. Both a and b

255. Cytokines secreted by Th cells are

a. IL-4
b. IL-10
c. IL-5 and IL-6
d. All of the above

256. Immediate type of hypersensitivity is

a. Type- I b. Type- II
c. Type- III d. Type- IV

257. Allergic inflammation is characterized by

a. Lymphocytes b. Monocytes
c. Neutrophils d. Eosinophils

258. Infarct is an example of

a. Coagulative necrosis
b. Liquefactive necrosis
c. Caseative necrosis
d. Fat necrosis

259. "Second line of cellular defense" is

a. Neutrophils
b. Plasma cells
c. Macrophages
d. Giant cells

260. Histamine is released from

a. Basophils
b. Mast cells
c. Platelets
d. All of the above

261. Pseudomembrane formation occurs in

a. Granulomatous inflammation
b. Mucous inflammation
c. Suppurative inflammation
d. Fibrinous inflammation

262. Blisters are formed in the case of

a. Serous inflammation
b. Mucous inflammation
c. Suppurative inflammation
d. Fibrinous inflammation

263. Delayed type of hypersensitivity/Cell mediated hypersensitvity is

a. Type- I
b. Type- II
c. Type- III
d. Type- IV

264. In anthrax clotting of blood is absent because

a. Hypostatic congestion occurs
b. Polypeptide capsule is present in bacteria
c. Polysaccharide capsule is present in bacteria
d. Fibrinolysin produced by bacteria causes lysis of fibrin

265. Biphasic Van den Bergh reaction is seen in

a. Hemolytic jaundice
b. Obstructive jaundice
c. Toxic jaundice
d. None of the above

266. Calcification seen in arteriosclerosis is

a. Dystrophic calcification
b. Metastatic calcification
c. Primary hyperparathyroidism
d. Secondary hyperparathyroidism

267. Metastatic calcification occur in

a. Hypercalcaernia
b. Primary hyperparathyroidism
c. Secondary hyperparathyroidism
d. All of the above

268. Tophi in articular gout results from precipitation of

a. Monosodium urate crystals
b. Uric acid
c. Oxalate crystals
d. All of the above

269. The mediator responsible for vasodilation, immediately after the injury is

a. Interleukin II
b. Leukotrienes
c. Thromboxane
d. Histamine

270. Gangrene in lungs is commonly caused by

a. Asphyxia
b. Epistaxis
c. Faulty drenching
d. Anemia

271. Most common site for dry gangrene is

a. Internal organs
b. Muscles
c. Extremities
d. All of the above

272. Example of gas gangrene is

a. Black quarter
b. Black disease
c. Malignant edema
d. All of the above

273. Metrorrhagia is hemorrhage from

a. Nose
b. Stomach
c. Oviduct
d. Uterus

274. Chemically Amyloid is

a. Starch
b. Fat
c. Protein
d. None of the above

275. Escape of RBC from break of the vessel wall is

a. Diapedesis
b. Rhexis
c. Ecchymoses
d. Petechiae

276. Triple response is because of

a. 5-HT b. Histamine
c. Kinin d. Heparin

277. Cooling of body after death is termed as

a. Livor mortis
b. Algor mortis
c. Rigor mortis
d. None of the above

278. Which is not a true tumour?

a. Keloid b. Xanthoma
c. Papilloma d. Myeloma

279. Blood clot mainly composed of WBCs is

a. Current jelly clot
b. Chicken fat clot
c. Chicken jelly clot
d. All of the above

280. Caisson disease or decompression sickness occurs because of

a. Increase in atmospheric pressure
b. Decrease in atmospheric pressure
c. Excess pressure on heart
d. All of the above

281. Process by which leukocytes come out of the blood vessels is

a. Pavementing b. Emigration
c. Extravasation d. Redistribution

282. Escape of RBC from intact blood vessels is

a. Diapedesis
b. Rhexis
c. Ecchymoses
d. Extravasation

283. Sterilized or surgical wound is repaired by

a. Healing by first intention
b. Healing by second intention
c. Healing by second intention
d. None of the above

284. "Brisket disease" occurs because of

a. Increase in atmospheric pressure
b. Decrease in atmospheric pressure
c. Excess pressure on heart
d. All of the above

285. The accumulation of excessive amounts of collagen in form of raised tumourous scar is known as

a. Keloid
b. Proud flesh
c. Exuberant granulation
d. All of the above

286. Fragmentation of nucleus in a cell is termed as

a. Pyknosis b. Karyorrhexis
c. Karyolysis d. Chromatolysis

287. "First line of cellular defense" in inflammation is

a. Monocyte
b. Macrophage
c. Lymphocyte
d. Neutrophil

288. An increase in the number of leucocytes in the blood is

a. Leukocytopenia
b. Leukophillia
c. Leukocytosis
d. Lymphocytosis

289. Release of neutrophils from the bone marrow is controlled by

a. Leukopoetin
b. Leukocytosis inducing factor
c. Colony stimulating factor
d. All of the above

290. An increase in the number of neutrophils in blood is known as

a. Leukocytosis
b. Leukopaenia
c. Neutrophilia
d. Leukaemic reaction

291. Schilling index helps in

a. Determining the immature forms of neutrophils
b. Determining the mature forms of neutrophils
c. Determining the immature forms of lymphocytes
d. Determining the mature forms of lymphocytes

292. Increase in immature forms of neutrophils in blood is known as
a. Shift to the left
b. Shift to the right
c. Lateral shift
d. Neutropaenia

293. Eosinophils are mainly recruited by
a. TNF
b. Eotaxin
c. IFN
d. Epsilon Toxin

294. Granulopoietin which controls the production of neutrophils is
a. Leukopoetin
b. Leukocytosis inducing factor
c. Colony stimulating factor
d. All of the above

295. Normal range of neutrophil in dog blood is
a. 55-65 %
b. 30-45 %
c. 20-40 %
d. 70-80 %

296. Mast cell is derived from
a. Monocyte
b. Neutrophil
c. Lymphocyte
d. Basophil

297. Perivascular cuffing is seen in
a. Copper poisoning
b. Salt poisoning
c. Cyanide poisoning
d. Fluoride poisoning

298. Plasma cell is derived from
a. B-lymphocyte
b. T-lymphocyte
c. Basophil
d. Monocyte

299. Eosinophilia is seen in
a. Allergic condition
b. Parasitic condition
c. Hypersensitivity reaction
d. All of the above

300. When organ fails to develop to their full normal size though there was a beginning, the condition is called
a. Aplasia
b. Hypoplasia
c. Atrophy
d. None of the above

301. The decrease in the size of a tissue after it has attained its full growth is called
a. Aplasia
b. Hypoplasia
c. Atrophy
d. None of the above

302. Macrophage is derived from
a. Monocyte
b. Lymphocyte
c. Neutrophil
d. Plasma cell

303. The enlargement of tissue due to increase in number of the cells is called as
a. Hypertrophy
b. Hyperplasia
c. Neoplasm
d. Hypoplasia

304. Brownish discolouration in chronic venous congestion caused by pigment is called as
a. Consolidation
b. Pneumoconiosis
c. Brown induration
d. None of the above

305. Which type of hyperaemia does not occur?
a. Acute general active hyperaemia
b. Acute local active hyperaemia
c. Chronic local active hyperaemia
d. Chronic local passsive hyperaemia

306. Failure of cells, tissues, or organs to attain their mature size is called
a. Aplasia
b. Hypoplasia
c. Atrophy
d. None of the above

307. Failure of an organ or tissue to develop is termed as
a. Aplasia
b. Hypoplasia
c. Atrophy
d. None of the above

308. Diffuse infiltration of amyloid in spleen is termed as
a. Bacon spleen
b. Sago spleen
c. Lardaceous spleen
d. None of the above

309. Blood in stool is

a. Epistaxis b. Hemoptysis
c. Melena d. Apoplexy

310. Increased amount of blood in the arterial system is called

a. Active Hyperaemia
b. Ischaemia
c. Infarction
d. Passsive Hyperaemia

311. Hemorrhage into the brain is called as

a. Epistaxis b. Hemoptysis
c. Melena d. Apoplexy

312. Small pin point hemorrhage is known as

a. Petechiae b. Ecchymoses
c. Rhexis d. Diapedesis

313. Extensive hemorrhages on the surface is called

a. Ecchymoses b. Petechiae
c. Rhexis d. Purpura

314. Increased amount of blood in the venous side of vascular system is called

a. Active Hyperaemia
b. Ischaemia
c. Infarction
d. Passsive Hyperaemia

315. The mechanism by which foreign material is transported through the circulatory system is called

a. Embolism b. Thrombus
c. Oedema d. Shock

316. Generalized subcutaneous edema is known as

a. Dropsy b. Hydrops
c. Anasarca d. Ascites

317. Overdose of anaesthesia may cause

a. Hypovolumic shock
b. Septic shock
c. Neurogenic shock
d. Cardiogenic shock

318. Most susceptible animal for atherosclerosis is

a. Cattle b. Swine
c. Rabbit d. Poultry

319. Section size in tissue microtome is

a. 25-30 micron b. 4-6 micron
c. 15-20 micron d. 8-10 micron

320. Bleeding from the oviduct is designated as

a. Epitaxis b. Hemosalpinx
c. Hematocele d. Hematemasis

321. Healing by first intention occurs in

a. Closed wound
b. Open wound
c. Infected wound
d. Suppurated wound

322. Liver nodules that consist of congenital local overgrowth of mature hepatocytes are

a. Nodular hyperplasia
b. Hepatomas
c. Benign sarcomas
d. Hamartomas

323. Apoptosis is encountered during

a. Embryogenesis and Organogenesis
b. Physiological involution of the endometrium and mammary gland
c. Deletion of autoreactive B and T cells
d. All of the above

324. Deposition of carbon or coal dust in lungs is called as

a. Acanthosis b. Anthrax
c. Anthracosis d. Anemia

325. Deposition of calcium carbonate or Calcium Dust in lungs is called as

a. Acanthosis b. Chalicosis
c. Anthracosis d. Argyrosis

326. Serum gives direct Van den Bergh test in

a. Diabetes
b. Obstructive jaundice
c. Hemorrhage
d. Toxic jaundice

327. Which is a Pro-apoptotic gene?

a. BAX gene
b. BAK gene
c. BAD gene
d. All of the above

328. Which is an Anti-apoptotic gene?

a. BCL-2
b. BCL-X_L
c. BCL-X_{ES}
d. All of the above

329. Initiator caspase for intrinsic pathway of apoptosis is

a. Caspase 8
b. Caspase 9
c. Caspase 3
d. All of the above

330. Most important factor for thrombus formation is

a. Endothelial injury
b. Alterations in normal blood flow
c. Blood hypercoagulability
d. All of the above

331. The extrinsic pathway of coagulation is activated by

a. Endothelial Injury
b. Tissue factor (tissue thromboplastin)
c. Both a and b
d. None of these

332. Deposition of Iron dust in lungs is called as

a. Plumbism
b. Siderosis
c. Anthracosis
d. Anemia

333. Rigor mortis occurs slowly in

a. Fat animals
b. Emaciated and chachexic animals
c. Average built animal
d. Not affected by size

334. Caseous necrosis is seen in

a. Tuberculosis
b. Caseous lymphadenitis in sheep
c. Oesophagostomiasis in sheep
d. All of the above

335. Excessive growth of granulation tissue without epithelial covering is called as

a. Keloid
b. Proud flesh
c. Granuloma
d. Fibroma

336. Von Kossa's silver nitrate stain stains the calcium in which colour

a. Blue
b. Pink
c. Black
d. Red

337. Cell which never regenerates is

a. Bone cell
b. Epithelial cell
c. Neuron
d. Hepatocytes

338. Enlargement of a tissue or organ due to increased size of individual cell is called

a. Hyperplasia
b. Hypertrophy
c. Metaplasia
d. Dysplasia

339. Lack of differentiation of neoplastic cells through inadequate maturation is known as

a. Dysplasia
b. Anaplasia
c. Metaplasia
d. Hyperplasia

340. Clockface or "Cart-wheel nucleus" is found in

a. Eosinophils
b. Helper T Cells
c. Heterophils
d. Plasma cells

341. Functional counter part of neutrophils in poultry and rabbit is

a. Eosinophils
b. Helper T Cells
c. Heterophils
d. Plasma cells

342. Accumulation of blood in the ventral portion of the body due to influence of gravity

a. Livor mortis
b. Algor mortis
c. Rigor mortis
d. None of the above

343. Pus cells are

a. Macrophages
b. Lymphocytes
c. Basophils
d. Neutrophils

344. Pus does not clot because
a. Pus is alkaline in nature
b. Does not contain platelets
c. Proteolytic enzymes of neutrophils liquefy fibrin
d. All of the above

345. Main component of exudate in serous Inflammation is
a. Plasma b. Mucus
c. Serum d. Fibrin

346. Familial predisposition to anaphylaxis is called
a. Atopy b. Tolerence
c. Idiosyncracy d. Both a and b

347. Suppuration is not encountered in tuberculosis because
a. Calcification interfere with suppuration
b. Caseous material in tuberculosis acts as an antienzyme
c. Cord Factor of Mycobacteria interfere with suppuration
d. All of the above

348. Nature of pus is
a. Acidic
b. Alkaline
c. Neutral
d. Either Acidic or neutral

349. Diffusely spreading suppurative inflammation of connective tissue caused by streptococci is called
a. Cabuncle b. Phlegmon
c. Folliculitis d. Boil

350. Immune complex mediated hypersensitivity is
a. Type I Hypersensitivity
b. Type II Hypersensitivity
c. Type III Hypersensitivity
d. Type IV Hypersensitivity

351. Major acute-phase protein of ruminants is
a. CRP b. SAP
c. Haptoglobin d. SAA

352. Horses that were used for the production of antiserum and antitoxins may suffer from
a. Cellular swelling
b. Amyloidosis
c. Hydropic degeneration
d. Hyaline degeneration

353. Fifth sign of inflammation was added by
a. Claudius Galen
b. Rudolph Virchow
c. William Harvey
d. Antonio Benivieni

354. Bence Jones proteins are secreted in
a. Urine of patients of SCC
b. Urine of patients of Multiple Myeloma
c. Sputum of patients of TB
d. All of the above

355. Digestion of tissues by enzymes derived from the lysosomes of the dead cells themselves is called
a. Necrosis
b. Apoptosis
c. Autolysis
d. Gangrene

356. Frostbite causes necrosis by development of
a. Hyperaemia b. Emboli
c. Thrombosis d. Gangrene

357. Cooked appearance of tissue is seen in
a. Caseative necrosis
b. Liquifactive necrosis
c. Fat necrosis
d. Coagulative necrosis

358. Most common type of necrosis is
a. Caseative necrosis
b. Liquifactive necrosis
c. Coagulative necrosis
d. Fat necrosis

359. Decomposition of tissues by enzymes of saprophytic bacteria is called
a. Necrosis
b. Apoptosis
c. Autolysis
d. Putrefaction

360. Rigor mortis is hastened by

a. High external temperatures
b. Violent exercise like racing and fighting
c. Violent muscular contractions in tetanus or strychnine poisoning
d. All of the above

361. Amyloid is deposited as

a. Alpha-pleated sheet structure
b. Beta-pleated sheet structure
c. Gamma-pleated sheet structure
d. None of the above

362. Rigor mortis settles rapidly in

a. Summer
b. Strychnine poisoning
c. Tetanus
d. All of the above

363. Examination of tissue removed from the living individual is called

a. Necropsy
b. Autopsy
c. Dropsy
d. Biopsy

364. Programmed cell death is called

a. Necrosis
b. Apoptosis
c. Autolysis
d. Gangrene

365. Deposition of calcium in a focal area of necrotic tissue is

a. Metastatic Calcification
b. Dystrophic Calcification
c. Rickets
d. All of the above

366. Which test is used to differentiate various types of jaundice?

a. Kosters test
b. Koombs test
c. Van den Bergh test
d. Strauss test

367. Supreme descriptive pathologist of all time was

a. Marcello Malpighi
b. Jean Fernel
c. John Hunter
d. Carl Rokitansky

368. A group of uncommon inborn or acquired disturbances of porphyrin metabolism is called

a. Porphyria
b. Argyria
c. Photosensitization
d. None of the above

369. Porphyrins are pigments normally present in

a. Haemoglobin
b. Myoglobin
c. Cytochromes
d. All of the above

370. Brown, black pigmentation of the bones is called

a. Osteodystrophy
b. Osteohaemachromatosis
c. Haemachromatosis
d. Fluorosis

371. Idiosyncrasy is

a. An unusual reaction to some substance
b. Extrinsic (exogenous) causes of disease
c. Intrinsic causes of disease
d. Congenital diseases

372. Who proposed four cardinal signs of inflammation?

a. Cornelius celsus
b. Claudius Galen
c. Rudolf Virchow
d. Hippocrates

373. Which cell Organelle is known as "Suicidal bags"

a. E.R.
b. Golgi
c. Lysosomes
d. Peroxisomes

374. Shrinkage in the size of cells that have attained full maturity is called

a. Aplasia
b. Hypoplasia
c. Atrophy
d. None of the above

375. Staining technique used for amyloid is

a. Oil red O
b. Sudan IV
c. Congo red
d. Gridley Stain

376. Reversion of cell in to its embryonic stage and lack of differentiation of neoplastic cell is termed as

a. Metaplasia b. Dysplasia
c. Hyperplasia d. Anaplasia

377. Type of degeneration due to failure of sodium pump mechanism is

a. Hyaline degeneration
b. Hydropic degeneration
c. Myxoid degeneration
d. Amyloid degeneration

378. Reduction in the effective circulatory blood volume and blood pressure is called

a. Ischaemia b. Shock
c. Infarction d. Hypotension

379. In Myasthenia gravis autoantibodies are formed against

a. Nucleus
b. Acetylcholine receptors
c. IgG
d. Synovial membrane

380. "Rose-Waaler test" is used for the detection of

a. Rheumatoid factor
b. Antinuclear antibodies
c. ACH receptors
d. Acute phase proteins

381. Dermatitis produced by the action of sunlight on certain photodynamic substances present in the skin is known as

a. Porphyria
b. Photosensitisation
c. Hypersensitivity
d. None of the above

382. Important marker for free radical injury is

a. Melanin b. Lipofuschin
c. Porphyrin d. Granuloma

383. Process whereby the body restores the injured part to as near its previous normal condition as possible

a. Healing b. Regeneration
c. Degeneration d. None of the above

384. "Lardaceous appearance" of spleen is seen in

a. Amyloid degenaration
b. Hyaline degeneration
c. Cloudy swelling
d. Fatty change

385. Animal with an extensive abnormal development is known as

a. Moron b. Atresia
c. Cyclopia d. Monster

386. Characteristic feature of chronic inflammation is

a. Phagocytosis of debris by macrophages
b. Fibroblastic proliferation
c. Absence of vascular changes
d. All of the above

387. The hall mark of granulomatous inflammation is

a. Giant cells b. Epitheloid cells
c. Granulomas d. Macrophages

388. Light blue amorphous regions in the cytoplasm of toxic neutrophils are known as

a. Russell body b. Dohle's body
c. Mallory body d. Basic protein

389. Highly radiosensitive cells is

a. Germinal cells b. Muscle cells
c. Nerve cells d. Bone cells

390. Zenker degeneration is commonly seen in

a. Germinal cells b. Muscle cells
c. Nerve cells d. Bone cells

391. Cells seen in abundance in avian inflammation in comparison to mammals are

a. Macrophages b. Neutrophils
c. Basophils d. Eosinophils

392. "Antinuclear factors" are observed in which immunological disorder

a. Sjogren's syndrome
b. Rheumatoid arthritis
c. Erosive polyarthritis
d. Systemic Lupus Erythematosus

393. Type of burns where only bullae or vesicles are present is

a. First-degree burns
b. Second-degree burns
c. Third-degree burns
d. Fourth-degree burns

394. Stain used for the demonstration of urate is

a. Congo red
b. Von Kossa Stain
c. Prussian blue reaction
d. De Galantha stain

395. Inflammation of duramater is known as

a. Encephalitis
b. Leptomeningitis
c. Pachymeningitis
d. Myelitis

396. Inflammation of the gall bladder is known as

a. Cystitis
b. Cholecystitis
c. Cholelithiasis
d. Cholangitis

397. Suppurative inflammation of hair follicle or sebaceous gland in the skin is called

a. Furuncle or boil
b. Pustule
c. Carbuncle
d. Folliculitis

398. Loss of contractility in nervous tissue is known as

a. Spasm
b. Tremor
c. Convulsions
d. Paralysis

399. Dilated and tortuous vein are called

a. Phlebitis
b. Omphalophlebitis
c. Phlebolith
d. Varicose vein

400. Cystic dilatation of a part of oviduct is called

a. Hydrosalpinx
b. Cystic ovary
c. Cystitis
d. Oophoritis

401. Commonest type of pneumonia in animals is

a. Verminous pneumonia
b. Bronchopneumonia
c. Mycotic pneumonia
d. All of the above

402. Twisting if intestine on its mesenteric axis is called

a. Torsion
b. Volvulus
c. Intussusception
d. All of the above

403. Large white kidney is seen in

a. Acute glomerulonephritis
b. Subacute glomerulonephritis
c. Chronic glomerulonephritis
d. Interstitial nephritis

404. Pneumoconiosis is characterized by

a. Serous lesions in lungs
b. Fibrinous lesions in lungs
c. Haemorrhagic lesions in lungs
d. Granulomatous lesions in lungs

405. Type of enteritis seen in Johne's disease is

a. Acute catarrhal enteritis
b. Chronic catarrhal enteritis
c. Haemorrhagic enteritis
d. Fibrinous enteritis

406. Hernia of spinal cord is termed as

a. Rachicele
b. Meningocele
c. Hematocele
d. Encephalocele

407. Variation in shape of erythrocytes is called

a. Poikilocytosis
b. Anisocytosis
c. Polychromasia
d. Polycythemia

408. Rumen concretion formed by hair is called

a. Epulis
b. Trichobezoar
c. Phytobezoar
d. Ranula

409. Dilatation and rupture of lung alveoli is called

a. Atelectasis
b. Bronchistenosis
c. Bronchiectasis
d. Emphysema

410. Reduction in the bony matrix is called

a. Rickets
b. Osteomalacia
c. Osteoporosis
d. Osteopetrosis

411. Acanthosis is

a. Hypoplasia of skin epithelium
b. Aplasia of skin epithelium
c. Hyperplasia of skin epithelium
d. Anaplasia of skin epithelium

412. Congenital lack of feather in fowl is known as

a. Alopecia
b. Apennosis
c. Hypotrichosis congenita
d. Epitheliogenesis imperfecta

413. Narrowing of bronchial lumen is known as

a. Atelectasis b. Bronchistenosis
c. Bronchiectasis d. Emphysema

414. Refractile inclusions found in the erythrocytes of horses treated with Phenothiazine are called

a. Pappenheimer bodies
b. Heinz bodies
c. Howel jolly bodies
d. Sideritic bodies

415. Inflammation of the umbilical vein is called

a. Phlebitis b. Omphalophlebitis
c. Phlebolith d. Omphalitis

416. Variation in size of erythrocytes is called

a. Anisocytosis b. Poikilocytosis
c. Polychromasia d. Polycythemia

417. Twisting of intestine on its long axis is called

a. Torsion b. Volvulus
c. Intussusception d. All of the above

418. Abnormal dorsal curvature of the spine is called

a. Scoliosis b. Lordosis
c. Kyphosis d. All of the above

419. Pregnancy toxemia in ewes is due to deficiency of

a. Folic acid b. Riboflavin
c. Biotin d. Choline

420. Chastek paralysis is caused due to deficiency of

a. Thiamine b. Niacin
c. Mn d. Vitamin K

421. An increase of nonprotein nitrogenous material in the blood is termed as

a. Azotemia b. Azoturia
c. Proteinuria d. Cilindruria

422. Chronic inflammation of spermatic cord is called

a. Funiculitis
b. Schirrous cord
c. Spermatitis
d. None of above

423. Inflammation of ovary is called as

a. Ootitis b. Orchitis
c. Oophoritis d. None of above

424. Conditions in which there is abnormal accumulation of cerebrospinal fluid in and around the brain is called

a. Hydrocele
b. Hydrocephalus
c. Porencephaly
d. Rachicele

425. Congenital aneurysm of minute arteries usually seen in cranium is

a. Fusiform aneurysm
b. Cirsoid aneurysm
c. Miliary aneurysm (Berry aneurysm)
d. Arteriovenous aneurysm

426. A condition in which the extended penis cannot be withdrawn is called

a. Paraphimosis b. Phimosis
c. Rainbow penis d. Balanitis

427. Congenital absence of anterior limbs is called as

a. Abrachia b. Amelia
c. Apodia d. Micromelia

428. Chronic inflammation of spermatic cord is known as

a. Funiculitis
b. Schirrhous cord
c. Spermatitis
d. None of the above

429. Gross appearance of heart during fibrinous pericarditis is described as

a. Cor pulmonale
b. Cardiac temponade
c. Thrush breast heart
d. Shaggy heart

430. Atherosclerosis is seen in

a. Elastic arteries
b. Arterioles
c. Veins
d. Capillaries

431. Non suppurative myocarditis with tigroid heart appearance in cattle is seen during

a. Rinderpest
b. Foot and mouth disease
c. Haemorrhagic septicemia
d. Anthrax

432. Presence of blood in tunica vaginalis is called

a. Hydrocele
b. Hydrocephalus
c. Hydrosalpinx
d. Haematocele

433. Inflammation of rectum is called

a. Typhlitis
b. Posthitis
c. Balanitis
d. Proctitis

434. Cystic dilated Fallopian tube filled with pus is called

a. Pyosalpinx
b. Salpingitis
c. Pneumometra
d. Pyometra

435. Calculi formed in the salivary duct is

a. Cholelith
b. Phlebolith
c. Sialolith
d. Urolith

436. Dermatitis with vesicle formation, infiltration by inflammatory exudates, watery discharge and development of scales and crusts is called

a. Wheal
b. Urticaria
c. Makula
d. Eczema

437. Type of pneumonia seen in CCPP

a. Verminous pneumonia
b. Bronchopneumonia
c. Mycotic pneumonia
d. Fibrinous pneumonia

438. Inflammation of gizzard is known as

a. Ventriculitis
b. Cropitis
c. Gonitis
d. Ingluvitis

439. Accumulation of pus in the uterus is called

a. Pyosalpinx
b. Salpingitis
c. Pneumometra
d. Pyometra

440. Urinary obstruction in dog due to calculi is most common in urethra at

a. Sigmoid curve
b. Os penis
c. Glans penis
d. Bulbus glandis

441. Heaves or broken wind in horses is

a. Acute alveolar emphysema
b. Chronic interstitial pneumonia
c. Chronic alveolar emphysema
d. Acute bronchopneumonia

442. Paralysis of left recurrent laryngeal nerve in horse leads to

a. Roaring/laryngeal hemiplegia
b. Empyema
c. Haeves
d. Acute bronchopneumonia

443. Presence of endometrial glands in places other than endometrium is called

a. Endometritis
b. Endometriosis
c. Ectopic endometritis
d. All of the above

444. Inflammation of brain and spinal cord is called

a. Encephalomalacia
b. Encephalomyelitis
c. Meningoencephalitis
d. Encephalitis

445. A condition in which ability of blood to coagulate is impaired is called

a. Hypercoagulability
b. Bleeding diathesis
c. Hemophilia
d. Coagulopathies

446. Protrusion of abdominal organs through natural or artificial opening is called

a. Tortion b. Incarceration
c. Volvulus d. Hernia

447. Cardiac cirrhosis is sequelae of

a. Cardiac temponade
b. Myocardial infarction
c. Left sided heart failure
d. Right sided heart failure

448. Pyometra is characterized by

a. Leukocytosis with shift to right
b. Leukocytosis with shift to left
c. Leukopaenia with shift to left
d. Leukopaenia with shift to right

449. "Cells of tripier" are seen in lung during

a. Bronchopneumonia
b. Verminous Pneumonia
c. Interstitial Pneumonia
d. Mycotic Pneumonia

450. *Dirofilaria immitis* in dogs is found in

a. Right ventricle b. Left ventricle
c. Kidney d. Lung

451. Proliferation of oligodendroglia cells around dead neuron is termed as

a. Neuronophagia b. Gliosis
c. Chromatolysis d. Satellitosis

452. Strauss test is used for diagnosis of

a. Glanders
b. Brucellosis
c. Ulcerative lymphangitis
d. All of the above

453. "Bread and butter" appearance is seen in

a. Suppurative pericarditis
b. Fibrinous pericarditis
c. Haemorrhagic pericarditis
d. Both a and c

454. Inflammation of vertebrae is called

a. Spondylitis b. Coxitis
c. Gonitis d. Ingluvitis

455. "Onion skin" appearance is found in

a. Arteriosclerosis
b. Atherosclerosis
c. Hyperplastic arteriolosclerosis
d. Hyaline arteriolosclerosis

456. Chronic arteritis of the anterior mesenteric artery in the horse is caused by

a. *Strongylus vulgaris*
b. *Onchocerca armillata*
c. *Dirofilaria immitis*
d. *Toxoplasma gondii*

457. Cystic dilatation of sub lingual salivary duct or salivary gland at the floor of the mouth cavity is called

a. Sialolith b. Noma
c. Ranula d. Stomatitis

458. Acanthosis is thickening of

a. Stratum lucidum
b. Stratum corneum
c. Malpighian layer
d. Stratum granulosum

459. Which one is not a true aneurysm?

a. Fusiform aneurysm
b. Cirsoid aneurysm
c. Dissecting aneurysm
d. Arteriovenous aneurysm

460. Replacement of Bone marrow by other tissue results in

a. Myelophthisic anemia
b. Megaloblastic anemia
c. Pernicious anemia
d. Aplastic anemia

461. Failure of the alveoli to open and contain air is

a. Atelectasis b. Bronchistenosis
c. Bronchiectasis d. Emphysema

462. Hepatisation of lung is seen in

a. Atelectasis
b. Pneumonia
c. Bronchiectasis
d. Emphysema

463. Inflammation of the prepuce is called

a. Paraphimosis b. Phimosis
c. Posthitis d. Balanitis

464. "White spotted kidney" is seen in

a. Chronic glomerulonephritis
b. Subacute glomerulonephritis
c. Diffuse interstitial nephritits
d. Focal interstitial nephritits

465. "Teratology of fallot" describes four numbers of congenital defects in

a. Liver b. Lungs
c. Brain d. Heart

466. "Epithelial crescents" are seen in

a. Acute glomerulonephritis
b. Subacute glomerulonephritis
c. Chronic glomerulonephritis
d. Acute interstitial nephritits

467. Opacity of lens is called

a. Cataract b. Luxation
c. Glaucoma d. Bupthalmos

468. A condition with increased intraocular pressure is called

a. Cataract
b. Luxation
c. Glaucoma
d. All of the above

469. Inflammation of grey meter in the spinal cord is known as

a. Leucomyelitis
b. Poliomyelitis
c. Leucomalacia
d. Poliomalacia

470. Unilateral paralysis arising in the brain cortex and peripheral nerves is termed as

a. Hemiplegia b. Paraplegia
c. Paralysis d. Paresis

471. Inflammation of bone marrow is termed as

a. Osteomyelitis b. Periostitis
c. Osteitis d. Osteodystrophia

472. Haemoglobinuria is seen in

a. Babesiosis
b. Leptospirosis
c. Chronic copper poisoning
d. All of the above

473. Pyaemic nephritis or Embolic nephritis is mainly caused by

a. Corynebacterium renale
b. *Corynebacterium pyogens*
c. *Streptococcus spp.*
d. Both b and c

474. Pyelonephritis is mainly caused by

a. Corynebacterium renale
b. *Corynebacterium pyogens*
c. *Streptococcus spp.*
d. Both b and c

475. Most common type of nephritis seen in animals is

a. Interstitial nephritis
b. Glomerulonephritis
c. Tubular nephritis
d. All of the above

476. Shrunken and contracted kidney with a finely granular surface is seen in

a. Acute glomerulonephritis
b. Subacute glomerulonephritis
c. Chronic glomerulonephritis
d. Acute interstitial nephritits

477. Intravascular elevation of nitrogenous waste products is called

a. Azoturia
b. Azotaemia
c. Gout
d. None of the above

478. Inflammation of glans penis is called

a. Typhlitis b. Posthitis
c. Balanitis d. Proctitis

479. Telescoping of intestine is known as

a. Torsion b. Volvulus
c. Intussusception d. All of the above

480. Inflammation of the palate is called

a. Sialadenitis b. Dacryocystitis
c. Lampas d. Balanitis

481. Necrosis of central nervous system is called

a. Encephalomalacia
b. Encephalomyelitis
c. Meningoencephalitis
d. Encephalitis

482. Congenital absence of limbs is called as

a. Abrachia b. Amelia
c. Apodia d. Micromelia

483. Wallerian degeneration is found in

a. Central nervous system
b. Peripheral nerves
c. Cardiac muscles
d. Skeletal muscles

484. Dilatation of renal pelvis due to partial and prolonged obstruction is called

a. Nephritis b. Nephrocalcinosis
c. Hydronephrosis d. Pyelonephrosis

485. More common type of goitre in animals is

a. Exophthalmic goitre
b. Colloid goitre
c. Hyperplastic goitre
d. None of the above

486. Abnormal ventral curvature of the spine is called

a. Scoliosis b. Lordosis
c. Kyphosis d. All of the above

487. Accumulation of oedema fluid in the abdominal cavity is called

a. Ascites b. Anasarca
c. Peritonitis d. Hydroperitonium

488. Haemopericardium leading to heart failure is called

a. Cor pulmonale
b. Cardiac temponade
c. Thrush breast heart
d. Shaggy heart

489. Hyperkeratosis is increase in the thickening of

a. Stratum lucidum b. Stratum corneum
c. Stratum malpighii d. All of the above

490. Thickening of all the layers of the skin is called

a. Hyperkeratosis b. Dyskeratosis
c. Acanthosis d. Pachyderma

491. Thickening of the skin seen usually in chronic dermatitis is called

a. Hyperkeratosis b. Dyskeratosis
c. Acanthosis d. Lichenification

492. Faulty development of the skin in which cells of Malpighian layer undergo abnormal, premature or imperfect keratinization is called

a. Hyperkeratosis b. Dyskeratosis
c. Acanthosis d. Pachyderma

493. A condition in which keratin layer is imperfectly formed and nuclei of the horn cells are retained is called

a. Hyperkeratosis b. Dyskeratosis
c. Parakeratosis d. Pachyderma

494. Hyperkeratosis with increased pigmentation results from hormonal imbalance is seen in

a. Hyperkeratosis
b. Dyskeratosis
c. Acanthosis nigricans
d. Spongiosis

495. Inflammation of sebaceous gland is called

a. Funiculitits b. Folliculitis
c. Acne d. Dermatitis

496. Cluster of boils situated close to each other opens through several pores is called

a. Funiculitits b. Folliculitis
c. Carbuncle d. Furuncle

497. Abscess of the hair follicle is called

a. Funiculitits b. Folliculitis
c. Carbuncle d. Furuncle or boil

498. Pustular dermatitis usually caused by *Staphylococcus spp.* is called

a. Funiculitits
b. Folliculitis
c. Carbuncle
d. Impetigo

499. Abscess formation of the meibomian gland is called

a. Hordeolum or stye
b. Chalazion
c. Carbuncle
d. Ankyloblepheron

500. Inflammation and abscess formation of the follicles of the eyelid is called

a. Hordeolum or stye
b. Chalazion
c. Carbuncle
d. Ankyloblepheron

501. Uveitis is inflammation of

a. Choroid, conjunctiva and ciliary body
b. Choroid, iris and ciliary body
c. Choroid, cornea and ciliary body
d. Choroid, retina and ciliary body

502. Pus filled cavity formed by disintegration of tissue is known as

a. Exudate
b. Cyst
c. Abscess
d. Granuloma

503. Inflammation of the subcutaneous adipose tissue is known as

a. Lipomatosis
b. Panniculitis
c. Vasculitis
d. Ingluvitis

504. Purpura haemorrhagica is seen in

a. Glanders
b. Strangles
c. Pseudorabies
d. FMD

505. "Blue bag" condition is also known as

a. Cryptococcal mastitis
b. Mycoplasmal mastitis
c. Gangrenous mastitis
d. Mycotic mastitis

506. Congenital purpura is seen in

a. Strangles
b. ICH
c. Hog cholera
d. Erythroblastosis foetalis

507. "Marie's disease" is also known as

a. Pulmonary osteoarthropathy
b. Chondrodystrophia foetalis
c. Achondroplasia
d. None of the above

508. Nuclear remnants appear as single or double spherical bluish bodies situated eccentrically in RBCs are

a. Dohle's bodies
b. Bollinger bodies
c. Heinz bodies
d. Howell jolly bodies

509. Dissolution of the Nissl's bodies of a neuron is called

a. Neuronophagia
b. Gliosis
c. Chromatolysis
d. Satellitosis

510. Decrease in the quantity of erythrocytes in the peripheral circulation is called

a. Relative polycythemia
b. Absolute polycythemia
c. Oligocythemia
d. Anaemia

511. Individuals having gonads of only one sex but possessing reproductive organs with some characteristics of the opposite sex are called

a. True hermaphrodite
b. Pseudohermaphrodite
c. Monster
d. Cryptorchid

512. Formation of a tubular cavity in the spinal cord not lined by ependyma is called

a. Spina bifida
b. Porencephaly
c. Dysraphia
d. Syringomyelia

513. "Pink tooth" is a condition associated with

a. Osteodystrophy
b. Osteohaemachromatosis
c. Congenital porphyria
d. Fluorosis

514. Pneumovagina is commomly seen in

a. Sow
b. Ewe
c. Doe
d. Mare

515. Failure of fusion of the upper lip along the midline or philtrum may lead to

a. Palatoschisis b. Myeloschisis
c. Cheiloschisis d. Cranioschisis

516. Suppurative lymphadenitis is seen in

a. Tuberculosis b. Strangles
c. Glanders d. Anthrax

517. Dilatation of lymph vessels is known as

a. Aneurysm b. Telangiectasis
c. Lymphangiectasis d. Bronchiectasis

518. Vesicular stomatitis is caused by

a. Foot and mouth disease virus
b. Vesicular exanthema virus
c. Vesicular stomatitis virus
d. All of the above

519. Too much mineralized trabecular bone is known as

a. Osteosclerosis b. Osteoporosis
c. Osteopetrosis d. Osteomalacia

520. Inflammation of fallopian tube is called

a. Salpingitis b. Metritis
c. Mastitis d. Oophoritis

521. The toxic principle in onion responsible for haemolytic anemia and haemoglobinuria is

a. Carbontetra Chloride
b. Chlorinated naphthalene
c. n-propyl disulphide
d. None of the above

522. Inflammation of uterus is called

a. Salpingitis b. Metritis
c. Mastitis d. Oophoritis

523. Marked dilatation of sinusoids in the liver is known as

a. Aneurysm b. Telangiectasis
c. Lymphangiectasis d. Bronchiectasis

524. Softening of white matter of brain is called

a. Poliomalacia b. Leucomalacia
c. Encephalomalacia d. Encephalitis

525. Inflammation of the bursa over the carpal joint is called

a. Synovitis b. Laminitis
c. Naviculitis d. Hygroma

526. Type of hydrocephalus in which CSF accumulates in the sub-dural space or pia-arachnoid space is

a. Internal hydrocephalus
b. External hydrocephalus
c. Non-communicating hydrocephalus
d. None of the above

527. "Basket cells" are

a. Ruptured immature neutrophils
b. Damaged Lymphocytes
c. Ruptured eosinophils
d. Sheep pox cells

528. Rachitic rosary and crooked sternum in birds is seen in

a. Osteopetrosis
b. Rickets
c. Osteoporosis
d. Osteomalacia

529. Individuals with gonads of both sexes are called

a. True hermaphrodite
b. Pseudohermaphrodite
c. Monster
d. Cryptorchid

530. Softening of gray matter of brain is called

a. Poliomalacia
b. Leucomalacia
c. Encephalomalacia
d. Encephalitis

531. Failure of adequate calcification of bones in adults resulting into enlarged medullary cavity is known as

a. Osteopetrosis b. Rickets
c. Osteoporosis d. Osteomalacia

532. Pseudohermaphroditism is very common in

a. Goats b. Pigs
c. Cattle d. Horses

533. Myelin sheath can be stained by

a. Marchi's stain
b. Sabin Feldman dye
c. Best carmine
d. Congo red

534. Robert's test is used for detection of

a. Glucose
b. Protein
c. Cholesterol
d. None of the above

535. Epithelial casts in urine are seen in

a. Acute nephritis
b. Chronic nephritis
c. Hydronephrosis
d. None of the above

536. Hematuria indicates

a. Presence of RBC in urine
b. Presence of hemoglobin in urine
c. Presence of fat in urine
d. None of the above

537. Hay's test is used to detect the presence of

a. Bile salts
b. Glucose
c. Ketone bodies
d. None of the above

538. A fresh urine sample having odour of ammonia suggests

a. Cystitis
b. Ketone bodies
c. Excessive protein
d. None of the above

539. Benzidine test is used for the detection of

a. Bile salts
b. Glucose
c. Ketone bodies
d. Blood

540. Benedict's test is used for the detection of

a. Bile salts
b. Glucose
c. Ketone bodies
d. Blood

541. Formation of foam upon shaking of urine suggests

a. Excessive protein
b. Excessive ketone bodies
c. Excessive amount of glucose
d. All of the above

542. Malignant tumor which does not metastasize is

a. Liposarcoma
b. Basal Cell Carcinoma
c. Rhabdomyosarcoma
d. Sqamous cell carcinoma

543. 'Sticker tumor' is also known as

a. Lipoma
b. Basal Cell Carcinoma
c. Canine Transmissible Venereal Tumor
d. Sqamous cell carcinoma

544. J. Michael Bishop and Harold Varmus received Nobel Prize in for their work on

a. Apoptosis
b. Proto oncogenes
c. Chemical carcinogens
d. None of the above

545. Benign tumour derived from non-glandular epithelial surfaces is known as

a. Papilloma
b. Adenoma
c. Sarcoma
d. Haemangioma

546. Spread of neoplastic cells from site of origin to distant organs or tissues in the body is known as

a. Anaplasia
b. Metaplasia
c. Metastasis
d. Dysplasia

547. Epithelial pearls or "Cell nests" are seen in

a. Basal Cell Carcinoma
b. Adenocarcinoma
c. Leiomyoma
d. Squamous cell carcinoma

548. Neoplastic disease involving one or more type of cells of the haemopoetic tissue

a. Anaemia
b. Leukemia
c. Pyaemia
d. Lymphoma

549. Hallmark of malignancy is

a. Anaplasia and the rate of growth of the neoplastic mass
b. Metastasis and the degree of encapsulation of the neoplastic mass
c. Presence of undifferentiated cells and evidence of metastasis
d. Increased mitotic figures

550. Canine transmissible venereal tumors are more common in

a. Young dogs during the years of greatest sexual activity
b. Old dogs during the years of greatest sexual activity
c. Young dogs during the years of least sexual activity
d. Old dogs during the years of least sexual activity

551. Commonly used method to diagnose neoplasia in animals is

a. Exfoliative cytology
b. X-Ray
c. Biopsy
d. Staining method

552. Most common neoplasm of the eye and related structures of cattle are

a. Adenocarcinoma
b. Basal cell carcinoma
c. Squamous cell carcinoma
d. Leiomyoma

553. A neoplasm composed of a variety of cell types representing more than one germ layer is called

a. Papilloma
b. Carcinoma
c. Teratoma
d. Basal cell carcinoma

554. Nearly phosphorus is present in

a. Bones
b. Liver
c. Blood
d. None of the above

555. Ross test is used to detect the presence of

a. Bile salts
b. Glucose
c. Ketone bodies
d. Blood

556. Anticoagulant used for estimation of blood glucose is

a. Sodium citrate
b. Heparin
c. Sodium fluoride
d. All of the above

557. Gmelin's test is used to detect the presence of

a. Bile salts
b. Glucose
c. Bile pigments
d. Blood

558. Calcium carbonate crystals are commonly seen in urine of

a. Buffaloes
b. Horses
c. Dogs
d. Swine

559. Increased number of transitional epithelial cells in urine suggests

a. Haematuria
b. Pyuria
c. Polyuria
d. Cystitis

560. Increased number of WBC in urine suggest

a. Heamaturia
b. Pyuria
c. Chronic nephritis
d. Ureteritis

561. Pandy test is used to detect the presence of

a. Glucose in CSF
b. Pus in CSF
c. Excess protein in CSF
d. Blood in CSF

562. Increased cell count in the cerebrospinal fluid is termed as is applied

a. Panmyelophthisis
b. Lymphomatosis
c. Pleocytosis
d. Leucocytosis

563. Increase in number of leukocytes of neoplastic origin is known as

a. Leukocytosis
b. Leukosis
c. Leukopaenia
d. Pleocytosis

564. Bare nucleus of the ruptured leukocytes is called

a. Gitter cell
b. Ghost cell
c. Smudge cell
d. Foam cell

565. Severe destruction of muscles may lead to

a. Proteinuria
b. Haematuria
c. Haemoglobinuria
d. Myoglobinuria

566. Typical map like diphtheroid lesions on tongue of cattle is seen in

a. FMD
b. Rinderpest
c. Orf
d. Vesicular stomatitis

567. Branch of pathology used in diagnosis of disease in hospital at patient bedside is called

a. Comparative pathology
b. Experimental pathology
c. Clinical pathology
d. Oncology

568. Coffin lid or prism shaped crystals present in urine are

a. Calcium carbonate
b. Clacium oxalate
c. Triple phosphate
d. Pituitary gland

569. Process by which glandular epithelium of the prostate is transformed into squamous epithelium following prolonged administration of estrogens is known as

a. Neoplasia
b. Dysplasia
c. Anaplasia
d. Metaplasia

570. "Feminizing tumor" is

a. Pheochromocytoma
b. Interstitial cell tumor
c. Granulosa cell tumor
d. Sertoli cell tumor

571. Spirocerca lupi of dogs is causal agent of

a. Malignant lymphomas and Rhabdomyomas of the oesophagus
b. Osteogenic sarcomas and Fibrosarcomas of the oesophagus
c. Fibrosarcomas and Adenocarcinomas of the oesophagus
d. Leiomyoma and Rhabdomyoma of the oesophagus

572. Most common neoplasm of the equine skin is

a. Melanoma
b. Squamous cell carcinoma
c. Sarcoid
d. Mast cell tumor

573. Neoplasm consisting of large oval cells with cyoplasmic granules that stain metachromatic with "toluidine blue" is

a. Histocytoma
b. Squamous cell carcinoma
c. Hemangiopericytoma
d. Mastocytoma

574. A neoplasm made up of interlacing fibres and strands of tissue that have a whorled appearance with interlacing bundles of fiber in which the nuclei are centrally located and "cigar-shaped" is

a. Fibrosarcoma
b. Leiomyoma
c. Neurofibroma
d. Rhabdomyoma

575. Wilm's tumor seen in pig and poultry at slaughter are

a. Pulmonary neoplasms
b. Cardiac neoplasms
c. Hepatic neoplasms
d. Renal neoplasms

576. Giant cell tumor is also known as

a. Osteoma
b. Osteosarcoma
c. Chondrosarcoma
d. Osteoclastoma

577. Epithelial pearls or Keratin pearls in squamous cell carcinoma is the example of

a. Cellular hyaline
b. Keratohyaline
c. Muscle hyaline
d. Connective tissue hyaline

578. Only tumour transmitted by coitus is

a. Lipoma
b. Basal Cell Carcinoma
c. Canine Transmissible Venereal Tumor
d. Sqamous cell carcinoma

579. Majority of the chemical carcinogens are

a. Direct acting
b. Indirect acting
c. Both a and b
d. None of the above

580. Bence-Jones proteins are excreted in urine of patients of

a. Multiple myeloma
b. Hypersensitivity reaction
c. Multiple sclerosis
d. Alcoholic liver disease

581. Basal cell carcinoma is also known as

a. Rodent ulcer
b. Jacob ulcer
c. Melanosarcoma
d. Both a and b

582. The breed of cattle with high predisposition for eye cancer is

a. Jersey b. Holstein
c. Hereford d. Southhorn

583. In malignant cells nuclear cytoplasm ratio is

a. Increased b. Decreased
c. Variable d. Constant

584. An attempt to estimate the degree of malignancy of a neoplasia based on histological criteria is known as

a. Grading b. Staging
c. Differentiation d. Pleomorphism

585. Lymphatic spread is seen in

a. Carcinoma b. Sarcoma
c. Both a and b d. None of above

586. Which gene is considered as "Guardian of genome" or "Molecular Policeman"

a. RAS gene b. ABL gene
c. TP53 gene d. BCL-2 gene

587. Sweetish odor of urine is because of

a. Glucose b. Protein
c. Bile salts d. Ketone bodies

588. Common site for the metastasis for the primary tumor is

a. Lung b. Liver
c. Intestine d. Brain

589. Horn cancer is a type of

a. Lipoma
b. Papilloma
c. Basal cell carcinoma
d. Squamous cell carcinoma

590. "Varocay bodies" are characteristic of

a. Meningioma b. Glioma
c. Neuroblastoma d. Schwannoma

591. Most common testicular tumour in dogs is

a. Seminoma b. Sertoli cell tumour
c. Leydig cell tumour d. None of the above

592. "Pap test" detects

a. Breast cancer b. Prostate cancer
c. Cervical cancer d. Skin cancer

593. Which of the following cancers does not form a solid neoplasm?

a. Leukemia b. Lipoma
c. Lymphoma d. Sarcoma

594. Mutagenic potential of chemicals is investigated by

a. Pap test b. Ames test
c. Tricin test d. Pyronin test

595. Thickness of the tissue for submitting histopathological samples is

a. 10 mm b. 20 mm
c. 30 mm d. 40 mm

596. Vegetative endocarditis is a frequent lesion in

a. *Listeria monocytogenes*
b. *Erysipelothrix rhusiopathiae*
c. *Sreptococcus porcinus*
d. *Staphylococcus hyicus*

597. Collection of proliferating glial cells in brain of dogs suffering from rabies is known as

a. Babes nodule b. Gitter cells
c. Gemistocytes d. Hertega cells

598. Closely packed lamina propria with large foamy epitheliod cells is seen in

a. Rotavirus
b. Johne's disease
c. Coronavirus
d. Tuberculosis

599. Most virulent type of Equine encephalomyelitis is

a. Eastern equine encephalomyelitis
b. Western equine encephalomyelitis
c. Venezuelan equine encephalomyelitis
d. Sylvatic equine encephalomyelitis

600. Splendore-Hoeppli material is a characteristic microscopic feature of

a. Bacterial disease
b. Fungal disease
c. Parasitic disease
d. Protozoan disease

601. Orf is mainly a disease of

a. Cattle
b. Swine
c. Horses
d. Sheep and goats

602. Linear paintbrush haemorrhages on the serosa of stomach is seen in

a. ICH
b. CD
c. Canine parvovirus infection
d. Babesiosis

603. FMD virus multiplies in the

a. Stratum lucidum
b. Stratum corneum
c. Stratum malpighii
d. Stratum spinosum

604. Poultry is resistant for

a. Tuberculosis
b. Botulism
c. Tetanus
d. Rabies

605. Prolapse of third eyelid and sawhorse posture is seen in

a. Aflatoxicosis
b. Botulism
c. Tetanus
d. Rabies

606. "Tigroid Heart" or necrotic myositis of heart muscles is seen in calves affected with

a. Bovine malignant catarrhal fever
b. Bovine ephemeral fever
c. Bovine viral diarrhea
d. Foot and mouth disease

607. "Wooden Tongue" in cattle is seen in

a. Actinomycosis
b. Botriomycosis
c. Haemorrhagic septicemia
d. Actinobacillosis

608. "Sulphur granules" in yellowish pus is seen in

a. Glanders
b. Strangles
c. Staphylococcosis
d. Actinomycosis

609. Burton's line in gums is indicative of

a. Cobalt poisoning
b. Arsenic poisoning
c. Fluorine poisoning
d. Lead poisoning

610. "Biphasic fever" or "Diphasic fever" is characteristic of

a. Rabies
b. Canine distemper
c. Infectious canine hepatitis
d. Bovine ephemeral fever

611. "Sequestra formation" and Marbling appearance of lung is Characteristic of

a. CBPP
b. CCPP
c. Tuberculosis
d. Both a and b

612. Oozing of tarry coloured uncoagulated blood from natural orifices and absence of rigor mortis is seen in

a. Haemorragic septicemia
b. Rinder pest
c. Anthrax
d. Rabies

613. "Circling disease" in cattle is caused by

a. *Listeria monocytogenes*
b. *Erysipelothrix rhusiopathiae*
c. *Streptococcus equi*
d. *Chlamydia psittacii*

614. Post mortem of carcass is prohibited in

a. Haemorragic septicemia
b. Rinder pest
c. Anthrax
d. Rabies

615. Suppurative rarefying osteomyelitis of the bones of the head, particularly the mandible and maxilla is seen in

a. Actinomycosis
b. Botriomycosis
c. Haemorrhagic Septicemia
d. Actinobacillosis

616. In cattles Negri bodies are seen in

a. Hippocampus
b. Purkinje cells of cerebellum
c. Medulla
d. Cerebrum

617. Punched out ulcers in the mucosa of trachea and larynx are seen in

a. Glanders b. Farcy
c. Both a and b d. None

618. Necrosis and gas gangrene in the muscles of thigh and shoulder region is seen in

a. Anthrax b. Black quarter
c. Braxy d. Tetanus

619. "Diamonds skin lesions" are seen in

a. *Erysipelothrix rhusiopathiae*
b. *Clostidium botulinum*
c. *Pasteurella multocida*
d. *Bacillus anthracis*

620. "Diamonds skin lesions" of swine erysipelas are

a. Raised areas of erythema
b. Depressed area of gangrene
c. Raised areas of hydropic degeneration
d. Raised areas of amyloid degeneration

621. Marbled appearance of lungs in adult cows is the characteristic post mortem lesion of

a. Contageous bovine pleuropneumonia
b. Contageous caprine pleuropneumonia
c. Strangles
d. Tuberculosis

622. Abortion usually occurs during last trimester of pregnancy in

a. Brucellosis b. Campylobacteriosis
c. Listeriosis d. Leptospirosis

623. Micro abscesses in the brain is characteristic lesion seen in

a. Listeriosis b. Leptospirosis
c. Tuberculosis d. Anthracosis

624. "Cellules claveleuses" of borrel are specific cells found in case of

a. Swine pox b. Sheep pox
c. Goat pox d. Camel pox

625. Neoplastic disease of older sheep is

a. Visna b. Maedi
c. Both a and b d. Jaagsiekte

626. Bran like deposition in buccal cavity is seen in

a. FMD b. Rinderpest
c. IBR d. BVD

627. Summer mastitis is caused by

a. Bovine viral diarrhoea
b. Corynebacterium pyogenes
c. Campylobacter jejuni
d. All of the above

628. Roseola, papules, vesicles, pustules and desquamated stages which appears in sequence in - weeks duration in

a. Pox
b. Vesicular exanthema
c. Vesicular stomatitis
d. Bovine pustular stomatitis

629. Febrile viral disease with croupous pneumonia and diptheritic inflammation of GI tract is

a. Swine fever
b. Swine dysentery
c. Swine septicaemia
d. Fowl cholera

630. Lesion seen over the heart in animals suffering from cachectic diseases is

a. Gelatinisation of fat of the pericardium
b. Petechial haemorrhages on the heart
c. Cardiac aneurysm
d. Cardiac tamponade

631. "Button ulcers" in caecum and colon of pigs are seen in

a. Swine fever
b. Swine dysentery
c. African swine fever
d. Fowl cholera

632. Characteristic microscopic lesion seen in Listeriosis is

a. Non-suppurative meningo encephalomyelitis
b. Suppurative meningoencephalomyelitis
c. Lymphocytic meningoencephalomyelitis
d. Haemorrhagic meningo encephalomyelitis

633. "Zebra markings" are seen in

a. Rinderpest
b. Foot and mouth disease
c. Johnes disease
d. Tuberculosis

634. DUNKOP and DIKKOP are forms of

a. African horse sickness
b. Equine infectious anaemia
c. Equine infectious encephalomyelitis
d. None of the above

635. Characteristic multiple foci of necrosis in the liver and dark discoloration of the skin (pelt) is seen in

a. Anthrax
b. Black disease
c. Braxy
d. Bovine Bacillary Haemoglobinuria

636. A transient corneal opacity involving one or both eyes of some recovered dogs is seen in

a. Canine distemper
b. Rabies
c. ICH
d. Pseudorabies

637. Disease associated with early abortion in cattle is

a. Trichomoniasis
b. Brucellosis
c. Aspergillosis
d. Listeriosis

638. Turkey egg kidney is seen in

a. Hog cholera
b. Fowl cholera
c. African swine fever
d. Leptospirosis

639. Disease associated with pyometra in cow is

a. Brucellosis
b. Trichomoniasis
c. Toxoplasmosis
d. Listeriosis

640. Extensive demyelination, presence of Gitter cells and Gemistocytic astrocyte which contain intranuclear inclusions are characteristic feature of

a. Canine distemper
b. Infectious canine hepatitis
c. Leptospirosis
d. Rabies

641. Negri bodies can be stained by

a. Koster's stain
b. Seller's stain
c. Macchiavello's stain
d. Gridley's stain

642. Oedematous thickening of gall bladder wall in dog is seen in

a. Canine distemper
b. Infectious canine hepatitis
c. Leptospirosis
d. Rabies

643. Hyperkeratosis of digital pad (Hard pad lesion) is seen in

a. Infectious Canine Hepatitis
b. Rabies
c. Canine Distemper
d. None of the above

644. Acute gangrenous myositis is characteristic pathological lesion of

a. Anthrax
b. BQ
c. Leptospirosis
d. Pasteurellosis

645. Nucleated thrombocytes are present in

a. Horse
b. Camel
c. Fowl
d. Cow

646. Characteristic lesion in brain of cow affected by mad cow disease is

a. Neuronal degeneration
b. Neuronal vacuolation
c. Inclusion bodies in neurons
d. Encephalitis

647. Nervous sign in ketosis is due to

a. Hypocalcemia
b. Hypoproteinemia
c. Hypoglycemia
d. Hypophosphatemia

648. In vitamin E deficient animals, a peculiar wax-like acid fast material accumulates in uterine muscle fibers, ovary and testes, is

a. Amyloid
b. Ceroid
c. Hematoidin
d. Byssinosis

649. Lamsiekte or lame sickness is caused due to deficiency of

a. Ca
b. P
c. Mg
d. Fe

650. Star gazing in poultry is due to deficiency of

a. Vitamin B_2
b. Vitamin B_1
c. Vitamin B_6
d. Vitamin B_{12}

651. Vitamin necessary for hydroxylation of proline and lysine in synthesis of collagen is

a. Vitamin A
b. Vitamin E
c. Vitamin C
d. Vitamin K

652. "Crazy chick disease" results in deficiency of

a. Vitamin E and Selenium
b. Vitamin C and Zinc
c. Vitamin K and Calcium
d. Riboflavin

653. First sign of per-acute case of HS is

a. Fever
b. Anorexia
c. Death
d. Dyspnoea

654. Mural thrombus is associated with which disease condition

a. Black quarter
b. Haemorrhagic septicaemia
c. Anthrax
d. Rabies

655. "Raspberry jam" appearance of spleen is observed in

a. Swine fever
b. Erysipelas
c. Pseudorabies
d. Equine Infectious Anaemia

656. 'Laryngeal nerve paralysis' in horses is observed in

a. Arsenic poisoning
b. Lead poisoning
c. Mercury poisoning
d. Molybdenum poisoning

657. In pox which stage is involved in the 'spread' of virus?

a. Macule
b. Papule
c. Vesicle
d. Pustule

658. Ochratoxin in poultry is

a. Nephrotoxic
b. Hepatotoxic
c. Cardiotoxic
d. Both a and b

659. "Joest bodies" or "Joest-Degen bodies" are seen in

a. Equine viral arteritis
b. Equine infectious anaemia
c. Borna disease
d. African horse sickness

660. Vertically transmitted viral disease of poultry is

a. EDS-76
b. Chicken infectious anemia
c. Lymphoid leukosis
d. All of the above

661. Characteristic histopathological finding in aflatoxicosis is

a. Liver necrosis
b. Bile duct hyperplasia
c. Caseous plug in trachea
d. Tubular degeneration in kidneys

662. Caecal coccidiosis of poultry is caused by

a. E. necatrix
b. *E. acervulina*
c. *E. tenella*
d. *E. mitis*

663. Fowl cholera is caused by

a. Haemophilus paragallinarum
b. *Pasteurella multocida*
c. *Mycoplasma gallisepticum*
d. *Aspergillus fumigatous*

664. Caseous air sacculitis is observed in

a. Infectious coryza
b. Chronic respiratory disease
c. Avian chlamydiosis
d. Fowl spirochetosis

665. "Copper bronze sheen" of liver is seen in

a. Pullorum disease
b. Fowl cholera
c. Infectious coryza
d. Fowl Typhoid

666. Most important source of Marek's disease infection is

a. Aerosol
b. Nasal secretions
c. Feather follicle
d. Faeces of infected birds

667. Match the Following

a) Doyle's form	1. Neurotropic velogenic
b) Beach's form	2. Viscerotropic velogenic
c) Beaudette's form	3. Mesogenic
d) Hitchner's form	4. Lentogenic

a. a-2, b-3, c-4, d-1
b. a-2, b-1, c-4, d-3
c. a-2, b-4, c-3, d-1
d. a-2, b-1, c-3, d-4

668. Cell associated Marek's disease virus is found in

a. T lymphocytes
b. B lymphocytes
c. Feather follicle
d. Heterophils

669. Cell free Marek's disease virus is found in

a. T lymphocytes
b. B lymphocytes
c. Feather follicle
d. Heterophils

670. Immunosuppressive disease of poultry is

a. Infectious bursal disease
b. Chicken infectious anemia
c. Marek's disease
d. All of the above

671. Vertically transmitted bacterial disease of poultry is

a. Pullorum disease and Fowl typhoid
b. Chronic respiratory disease
c. Colibacillosis
d. All of the above

672. Haemorrhages on the tip of proventricular glands, caecal tonsils and intestine is observed in

a. Infectious bursal disease
b. Ranikhet disease
c. Bird flu
d. Marek's disease

673. Chronic respiratory disease is caused by

a. *Haemophilus paragallinarum*
b. *Pasteurella multocida*
c. *Mycoplasma gallisepticum*
d. *Aspergillus fumigatous*

674. In avian tuberculosis the lesions are confined to

a. Lungs
b. Kidneys
c. Lymph nodes
d. Gastrointestinal tract

675. Swelling of infraorbital sinus with cheesy exudate is seen in

a. Chronic respiratory disease
b. Collibacillosis
c. Infectious bursal disease
d. Infectious coryza

676. Most potent and toxic aflatoxin in poultry is

a. Aflatoxin B1
b. Aflatoxin B2
c. Aflatoxin G1
d. Aflatoxin G2

677. Characteristic posture of one leg stretched forward and another leg backward (Sportsman Posture) is seen in

a. Lymphoid leukosis
b. Inclusion body hepatitis
c. Infectious bursal disease
d. Marek's disease

678. Most potent and toxic Ochratoxin in poultry is

a. Ochratoxin A
b. Ochratoxin B
c. Ochratoxin C
d. Ochratoxin D

679. Petechial haemorrhage at the junction of gizzard and proventriculus is seen in

a. Ranikhet disease
b. Infectious bronchitis
c. Infectious bursal disease
d. Avian influenza

680. Intranuclear inclusion bodies in tracheal epithelium is characteristic of

a. Ranikhet disease
b. Infectious bronchitis
c. Infectious bursal disease
d. Infectious Laryngotracheitis

681. Acute form of Pullorum disease is predominantly seen in

a. Chicks above 3 wk of age
b. Chicks under 3 wk of age
c. Adults
d. Grower

682. Common complication of IBD in young broiler is

a. Pododermatitis
b. Gangrenous dermatitis
c. Gangrenous enteritis
d. Grower

683. Abnormal ovary with the irregular, cystic, mis-shapen, discoloured and pedunculated ova with prominent thickened stalks is characteristic lesion of

a. Pullorum disease
b. Fowl cholera
c. Infectious coryza
d. Fowl Typhoid

684. Kissing disease is also known as

a. Salmonellosis
b. Psittacosis
c. Camplylobacteriosis
d. Colibacillosis

685. Cheesy exudates in the eyes of birds are seen in the deficiency of

a. Vitamin A
b. Vitamin E
c. Vitamin K
d. None of the above

686. 'Thrush' is also known as

a. Crop mycosis
b. Candidiasis
c. Moniliasis
d. All of the above

687. Small grayish white granular eruptions in the comb, wattle, eyelids and mouth of a bird is seen in

a. Fowl plague
b. Fowl cholera
c. Fowl pox
d. Fowl typhoid

688. Icteric appearance of the carcass, hepatomagaly with dark red to brownish discolouration and the surface shows distinctive coppery bronze sheen in

a. Fowl typhoid
b. Fowl cholera
c. Fowl plague
d. All of the above

689. Linear streaks of haemorrhage, diphtheritic deposits in the mucosa of oesophagus, scattered erosions and ulcers in the gizzard, haemorrhage in the ileac-annular bands are observed in

a. Duck viral hepatitis
b. Duck viral enteritis
c. Fowl plague
d. Duck influenza

690. Mucopurulent exudates in the nares, fibrinopurulent exudates over pericardium, pleura, air sacs, hepatomegaly, marked enlargement of spleen and necrotic foci on its surface are observed in

a. Avian influenza
b. Infectious bronchitis
c. Ranikhet disease
d. Mycoplasmosis

691. Marked elevation of body temperature, rapid loss of body weight, passing of fluid, green droppings, paralysis late in the disease and birds are extremely anemic

a. Spirochaetosis
b. Bacillary white diarrhoea
c. Ranikhet disease
d. Fowl typhoid

692. Hard, yellow, nodular granulomas in the intestine and caecum is observed in

a. TB
b. Hjarre's disease
c. Ulcerative enteritis
d. Ulcerative coloitis

693. Multiple yellow to white pin point nodules scattered throughout the lung tissue is seen in

a. Histoplasmosis b. Moniliasis
c. Aspergillosis d. Favus

694. White powder like spots on unfeathered skin and comb is observed in

a. Favus b. Aspergillosis
c. Moniliasis d. Histoplasmosis

695. Generalised congestion of internal organs, cyanosis of combs, petechial haemorrhages in the pericardium and other organs is observed in

a. Fowl cholera
b. Bangkok haemorrhagic disease
c. IBD
d. Fowl typhoid

696. Cloudiness with presence of cheesy exudates in the air sac membranes and body cavities, fibrinous pericarditis and perihepatitis are lesions of

a. Mycoplasmosis
b. Avian Influenza
c. Avian monocytosis
d. Inclusion body hepatitis

697. The virus which interfere with a normal blood clotting mechanism causing muscle hemorrhage

a. BHD b. AI
c. IBD d. All of the above

698. "Morocco leather appearance" in liver is seen in

a. Lymphoid leukosis
b. Erythroid leukosis
c. Myelocytomatosis
d. Myeloblastosis

699. MATSA is

a. Marek's disease tumor associated surface antigen
b. Marek's disease tumor associated specific antibody
c. Marek's disease thymus associated surface antigen
d. Mucosal disease tumor associated specific antigen

700. Immunosupressive and carcinogenic mycotoxin is

a. Ochratoxin b. Aflatoxin
c. Oosporein d. Rubratoxin

701. Aggregations of lymphocytes in proventriculus, gizzard and pancreas is suggestive of

a. Avian Encephalomyelitis
b. LL
c. MD
d. All of the above

702. COFAL is used as Diagnostic test for

a. Lymphoid leukosis
b. Avian encephalomyelitis
c. Avian influenza
d. Infectious bursal disease

703. Natural reservoir host of EDS-virus is

a. Duck and Geese b. Chicken
c. Turkey d. All of the above

704. Form of Fowl pox causing high mortality in layers is

a. Diptheritic form
b. Dry form
c. Cutaneous form
d. None of the above

705. "Blind layers" and "Watery whites" condition is associated with disease

a. IBD b. EDS-76
c. IB d. All of above

706. Caseous plug in the lower trachea and bronchi of dead chicks is observed in

a. IBD b. EDS-76
c. IB d. ILT

707. "Turkish towel" like appearance of crop and oesophagus and ulcer in mouth and oesophagus are indicative of

a. Favus
b. Thrush
c. Aspergillosis
d. None of the above

708. Sudden fall in egg production at peak production with thin shelled and shell-less egg in a flock is indicative of

a. EDS-76 b. IB
c. RD d. None of the above

709. Presence of cheesy deposits in the air sacs is indicative of

a. Infectious coryza
b. Chronic respiratory disease
c. Avian chlamydiosis
d. Fowl spirochetosis

710. Yellowish white nodules (small bumps) in the lungs are characteristic of

a. Aspergillosis b. Favus
c. CRD d. Infectious coryza

711. Marek's disease is caused by

a. Gallid Herpesvirus - 1
b. Birnavirus
c. Gallid Herpesvirus - 2
d. Circovirus

712. In peracute form of ILT main lesion is

a. Hemorrhagic trachitis
b. Caseous diphtheritic exudates
c. Obstructive plugs in larynx
d. All of the above

713. IBD virus mainly affects

a. Chicks of 3-6 weeks of age
b. Chicks upto 2 weeks of age
c. Chicks of more than 12 weeks of age
d. Day old chicks

714. Infectious laryngotracheitis is caused by

a. Gallid Herpesvirus - 1
b. Birnavirus
c. Gallid Herpesvirus - 2
d. Circovirus

715. Hjarre's disease or coligranuloma is caused by

a. *Corynebacterium pyogenes*
b. *Streptococcus aureus*
c. *Erysepelothrix rhusiopathae*
d. *E. coli*

716. Vertically transmitted disease of poultry is

a. Chronic Respiratory Disease
b. Avian encephalomyelitis
c. Chicken infectious anemia
d. All of the above

717. Enlarged edematous bursa with ecchymotic haemorrhages in breast and thigh muscles are observed in

a. Ranikhet disease
b. Inclusion body hepatitis
c. Infectious bursal disease
d. Infectious bronchitis

718. 'Pearl eye' condition is seen in

a. Avian encephalomyelitis
b. Lymphoid leukosis
c. Egg drop syndrome
d. Marek's disease

719. In poultry Intradermal test for T.B. is performed in

a. Skin b. Comb
c. Wattle d. All of the above

720. Thin-shelled, soft-shelled, and shell-less eggs are characteristic feature of

a. Egg drop syndrome - 76
b. Chicken infectious anemia
c. Infectious bronchitis
d. Avian encephalomyelitis

721. Leechi disease is also known as

a. Angara disease
b. Hydropericardium Hepatitis Syndrome
c. Both a and b
d. Helicopter disease

722. Lesions of tuberculosis in deer is commonly seen in

a. Lymph nodes b. Lungs
c. Bone marrow d. Intestine

723. Hepatic coccidiosis in rabbit is caused by
a. *Syphacia obvelata*
b. *Apiscularis tetraptera*
c. *Klosiella muris*
d. *Eimeria stiedae*

724. "Chattering" in mice is seen because of
a. *Clostridium piliformis*
b. *Klebsiella pneumoniae*
c. *Citrobacter rodentium*
d. *Mycoplasma pulmonis*

725. Most common neoplasm of rabbit is
a. Uterine adenocarcinoma
b. Bile duct adenoma
c. Osteosarcoma
d. None of the above

726. Tularemia in rabbits is caused by
a. Francisella tularensis
b. Moraxella muris
c. Pasteurella piliformis
d. *Citrobactor muris*

727. "Fat rat" syndrome is also known as
a. Yersiniosis
b. Tyzzer's diseases
c. Salmonellosis
d. Pasteurellosis

728. Snuffles in rabbits is caused by
a. Clostridium piliformis
b. Klebsiella pneumoniae
c. Pasteurella multocida
d. Bartonella bacilliformis

729. Tyzzer's disease is caused by
a. *Clostridium piliformis*
b. *Klebsiella pneumoniae*
c. *Pasteurella multocida*
d. *Corynebacterium kutscheri*

730. Megaloileitis is an important post-mortem lesion observed in
a. Salmonellosis
b. Ring tail
c. Snuffles
d. Tyzzer's diseases

731. "Vent disease" (rabbit syphilis) in domestic rabbits is caused by
a. Clostridium piliformis
b. Klebsiella pneumoniae
c. Pasteurella multocida
d. *Treponema paraluis cuniculi*

732. "Wet tail" in hamster is also known as
a. Proliferative Ileitis
b. Transmissable Ileal Hyperplasia
c. Proliferative typhlitis
d. Both a and b

733. Scurvy is commonly seen in
a. Rat
b. Guinea pig
c. Rabbit
d. Hamster

734. Izuka's test is used for diagnosis of
a. Osteopetrosis
b. Rickets
c. Osteoporosis
d. Osteomalacia

Answer Sheet

1. a	2. c	3. a	4. c	5. a	6. b	7. d	8. c	9. a	10. b
11. b	12. b	13. d	14. a	15. b	16. d	17. d	18. a	19. c	20. c
21. a	22. a	23. c	24. d	25. a	26. b	27. b	28. a	29. a	30. b
31. a	32. b	33. b	34. a	35. b	36. b	37. a	38. c	39. d	40. a
41. a	42. d	43. b	44. a	45. b	46. d	47. b	48. d	49. d	50. a
51. d	52. b	53. d	54. c	55. b	56. d	57. b	58. d	59. d	60. d
61. a	62. c	63. c	64. b	65. b	66. d	67. b	68. c	69. a	70. b
71. b	72. a	73. b	74. a	75. a	76. b	77. c	78. a	79. d	80. d
81. a	82. d	83. a	84. c	85. b	86. c	87. d	88. a	89. a	90. b
91. d	92. b	93. a	94. a	95. d	96. d	97. b	98. d	99. a	100. a
101. b	102. a	103. b	104. a	105. b	106. a	107. d	108. d	109. a	110. d
111. d	112. c	113. a	114. d	115. b	116. c	117. a	118. a	119. b	120. d
121. d	122. c	123. a	124. c	125. b	126. a	127. b	128. c	129. d	130. b
131. b	132. d	133. d	134. a	135. d	136. c	137. b	138. c	139. b	140. d
141. a	142. d	143. a	144. d	145. b	146. b	147. b	148. c	149. c	150. b
151. b	152. c	153. d	154. a	155. d	156. a	157. b	158. a	159. b	160. d
161. a	162. b	163. d	164. d	165. d	166. b	167. c	168. d	169. d	170. b
171. a	172. a	173. b	174. d	175. a	176. a	177. d	178. b	179. b	180. c
181. c	182. d	183. c	184. d	185. a	186. c	187. d	188. b	189. d	190. d
191. d	192. a	193. c	194. d	195. b	196. a	197. c	198. a	199. d	200. b
201. b	202. a	203. d	204. d	205. a	206. b	207. c	208. d	209. a	210. c
211. c	212. d	213. b	214. c	215. b	216. a	217. c	218. c	219. b	220. b
221. d	222. b	223. a	224. a	225. d	226. b	227. a	228. c	229. a	230. d
231. b	232. d	233. b	234. c	235. d	236. b	237. c	238. c	239. d	240. a
241. b	242. b	243. c	244. c	245. c	246. b	247. c	248. c	249. d	250. d
251. a	252. b	253. b	254. d	255. d	256. a	257. d	258. a	259. c	260. d
261. d	262. a	263. d	264. d	265. c	266. a	267. d	268. a	269. d	270. c
271. c	272. d	273. d	274. c	275. b	276. b	277. b	278. a	279. b	280. a
281. b	282. a	283. a	284. b	285. a	286. b	287. d	288. c	289. b	290. c
291. a	292. a	293. b	294. c	295. a	296. d	297. b	298. a	299. d	300. b
301. c	302. a	303. b	304. c	305. c	306. b	307. a	308. a	309. c	310. a
311. d	312. a	313. a	314. d	315. a	316. c	317. c	318. b	319. b	320. b

321. a	322. d	323. d	324. c	325. b	326. b	327. d	328. d	329. b	330. a
331. b	332. b	333. b	334. d	335. b	336. c	337. c	338. b	339. b	340. d
341. c	342. a	343. d	344. c	345. a	346. a	347. b	348. b	349. b	350. c
351. c	352. b	353. b	354. b	355. c	356. c	357. d	358. c	359. d	360. d
361. b	362. d	363. d	364. b	365. b	366. c	367. d	368. a	369. d	370. b
371. a	372. a	373. c	374. c	375. c	376. d	377. b	378. b	379. b	380. a
381. b	382. b	383. a	384. b	385. d	386. d	387. b	388. b	389. a	390. b
391. c	392. d	393. b	394. d	395. c	396. b	397. a	398. d	399. d	400. a
401. b	402. b	403. b	404. d	405. b	406. a	407. a	408. b	409. d	410. c
411. c	412. b	413. b	414. b	415. b	416. a	417. a	418. c	419. d	420. a
421. a	422. a	423. c	424. b	425. c	426. a	427. a	428. b	429. d	430. a
431. b	432. d	433. d	434. a	435. c	436. d	437. d	438. a	439. d	440. b
441. c	442. a	443. b	444. b	445. d	446. d	447. d	448. b	449. c	450. a
451. d	452. d	453. b	454. a	455. c	456. a	457. c	458. c	459. c	460. a
461. a	462. b	463. c	464. d	465. d	466. b	467. a	468. c	469. b	470. a
471. a	472. d	473. d	474. a	475. a	476. c	477. b	478. c	479. c	480. c
481. a	482. b	483. b	484. c	485. b	486. b	487. a	488. b	489. b	490. d
491. d	492. b	493. c	494. c	495. c	496. c	497. d	498. d	499. b	500. a
501. b	502. c	503. b	504. b	505. c	506. d	507. a	508. d	509. c	510. c
511. b	512. d	513. c	514. d	515. c	516. b	517. c	518. d	519. c	520. a
521. c	522. b	523. b	524. b	525. d	526. b	527. a	528. b	529. a	530. a
531. d	532. a	533. a	534. b	535. a	536. a	537. a	538. a	539. d	540. b
541. a	542. b	543. c	544. b	545. a	546. c	547. d	548. b	549. c	550. a
551. c	552. c	553. c	554. a	555. c	556. c	557. c	558. b	559. d	560. b
561. c	562. c	563. b	564. c	565. d	566. b	567. c	568. c	569. d	570. d
571. b	572. c	573. d	574. b	575. d	576. d	577. b	578. c	579. b	580. a
581. d	582. c	583. a	584. a	585. a	586. c	587. d	588. a	589. d	590. d
591. c	592. c	593. a	594. b	595. a	596. b	597. a	598. b	599. a	600. b
601. d	602. a	603. d	604. c	605. c	606. d	607. d	608. d	609. d	610. b
611. a	612. c	613. a	614. c	615. a	616. b	617. a	618. b	619. a	620. a
621. a	622. a	623. a	624. b	625. d	626. b	627. b	628. a	629. a	630. a
631. a	632. b	633. a	634. a	635. b	636. c	637. a	638. a	639. b	640. a
641. b	642. b	643. c	644. b	645. c	646. b	647. c	648. b	649. b	650. b

651. c	652. a	653. c	654. a	655. d	656. b	657. c	658. a	659. c	660. d
661. b	662. c	663. b	664. b	665. d	666. c	667. d	668. a	669. c	670. d
671. d	672. b	673. c	674. d	675. d	676. a	677. d	678. a	679. c	680. d
681. b	682. b	683. a	684. b	685. a	686. d	687. c	688. a	689. b	690. d
691. a	692. b	693. c	694. a	695. a	696. a	697. c	698. d	699. a	700. b
701. a	702. a	703. a	704. a	705. c	706. c	707. b	708. a	709. b	710. a
711. c	712. a	713. a	714. a	715. d	716. d	717. c	718. d	719. c	720. a
721. c	722. a	723. d	724. d	725. a	726. a	727. b	728. c	729. a	730. d
731. d	732. d	733. b	734. c						

Unit – 3

Veterinary Parasitology

Trematodes

Common name	Scientific name	Remarks
Tropical liver fluke	*Fasciola gigantica*	» Most common liver fluke in India » Intestinal caeca have both external and internal branching » Snail *(Lymnea auricularia)* is intermediate host » "Pipe stem liver" or "Clay pipe like appearance" of liver is seen » Drug of choice: Triclabendazole (Fasinex)
Temperate liver fluke	*Fasciola hepatica*	» Prominent cone and shoulder » Intestinal caeca have external branching » *Lymnea truncatula* is intermediate host
Elephant liver fluke	*Fasciola jacksoni*	Similar to ovine fascioliasis
Lancet liver fluke	*Dicrocoelium dendriticum*	» Cercaria is called "Cercaria vitrina/ xiphidiocercaria" » Clumps of cercaria forms "Slime balls" » Radia stage is absent » Second intermediate host - Ants
Oriental or Chinese liver fluke	*Clonorchis sinensis*	» Cholangitis, Cholangiohepatitis, Cholangiocarcinoma
Oriental liver fluke	*Opisthorchis felineus*	» Electric bulb shaped egg are thought to cause liver or pancreas carcinoma » Diagnonally placed lobed testis

Cat liver fluke	*Platynosomum fastosum*	» Causes "Lizard poisoning"
Giant intestinal fluke	*Fasciolopsis buski*	» Site: Small intestine of man and pig » Metacercaria encyst on water chestnut and water calthrop » Spread: by raw water chestnut and tubers
Lung fluke	*Paragonimus westermanii*	» Second intermediate host: Crab and cray fish » Rusty colored sputum » Cercaria is called "Microcercous cercaria" » "Hazel nut shaped cyst" is found with paired parasite inside
Oviduct fluke	*Prosthogonimus ovatus*	» Vitellaria form "Grape like bunches" in lateral field » Second intermediate host: Nymph of dragonfly » Radia stage is absent » Production of abnormal eggs with discharge of albumen is seen in affected birds
Blood fluke	*Schistosoma* spp.	» Unisexual or dioecious » Redia and Metacercaria stages are absent » Male carries female in "Gynaecophoric canal" » Cercaria is called "Furcocercous cercaria" (Bifurcated tail) » Infective stage is Cercaria (Through skin penetration) » Nasal Schistosomosis/Nasal granuloma: *S. nasalis* » Egg possess terminal or lateral spine » Drug of choice: Sod. Antimony tartrate and Tarter emetic
Conical fluke/Rumen fluke	*Paramphistomum cervi*	» Wavy intestinal caeca » "Pomegranate seed like appearance" in rumen » Cercaria is called "Cercaria pigmentata" » Immature amphistomosis is more dangerous » Immature amphistomosis is called "Bissi rog" or "Pittu gillar" » Foetid and projectile (shooting) diarrhea is seen

Biliary amphistome	*Gigantocotyl explanatum*	» Ventral sucker 3-4 times oral sucker » Caused by both mature and immature stages
Small intestinal fluke of dog	*Heterophyes heteriphyes*	» Metacercariae remain alive upto 7 day in Fesikh, Egyptian salted fish
Intestinal fluke of fox	*Euryhelmis squamula*	» Parapleurolophocercous cercariae encyst in young frog
Pancreatic fluke	*Eurytrema pancreaticum*	» Second intermediate host: Grasshopper and crickets
Yellow grub in fishes	*Clinostomum complanatum*	» Responsible for Halzoun syndrome (Laryngopharyngitis) in man » Metacercariae form yellow cyst in fish muscle
Black spot disease in fishes	*Posthodiplostomum cuticula*	» Pigmented metacercariae in fish muscles
Grey pearl disease in fishes	*Neodiplostomum perlatum*	» Small grey pearl like metacercariae in fish muscle
Intestinal fluke of dog	*Alaria alata*	» Mesocercariae formed in muscle of frog and toad
Salmon fluke of dog	*Nanophyetus salmincola*	» Transmit rickettsial organism of salmon poisoning and Elokomin fluke fever

Cestodes

Common name	Scientific name	Remark
Double pored tapeworm of cattle	*Moniezia benedeni* *Thysanosoma actinoides*	» Cooked rice grain like gravid segment seen in faeces » Intermediate host - Oribatid mites » Eggs – Quadrangular
Double pored tapeworm of sheep	*Moniezia expansa*	» Cooked rice grain like gravid segment seen in faeces » Intermediate host - Oribatid mites » Eggs – Triangular or Pyramidal
Double pored tapeworm of dog	*Dipylidium caninum*	» "Cucumber seed shaped" motile gravid segment seen in faeces » "Rose thorn shaped" hooks » Ovary and vitellaria are like "bunch of grapes"

Double pored tapeworm of poultry	*Cotugnia digonopora*	» Ants (*Monomorium*) act as intermediate host
Dwarf tape worm of poultry	*Davainea proglottina*	» Most pathogenic tapeworm of poultry » Smallest tapeworm of poultry » Gastropod mollusc (slugs) act as Intermediate host » "Hammer shaped hooks"
Dwarf tapeworm of equine Lappeted cestode	*Paranaplocephala mamilana*	» Adult tapeworm sized between 6-50 mm
Pork tape worm	*Taenia solium*	» World first cestode vaccine, "Cysvax" launched by IIL » Responsible for neurocysticercosis and ocular cysticercosis in man » Responsible for "Measly pork"
Beef tape worm	*Taenia saginata*	» Scolex is unarmed » Responsible for "Measly beef"
Fish tape worm Broad tape worm	Diphyllobothrium latum	» Golden yellow operculated egg in dog faeces » Broad fish tapeworm of dog » Largest tapeworm of dog » Largest tapeworm of man » Causes Vit-B_{12} deficiency and Pernicious anaemia » Head (scolex) is spoon or spatula shaped
Fringed tapeworm of ruminant	*Thysanosoma actnoides*	» Occur in bile duct, pancreatic duct and SI of ruminant » Large grossly visible papillae on posterior border
Dwarf tapeworm of man	*Rodentolepis nana (Hymenolepis nana)*	» Direct as well indirect life cycle
Pseudoscolex tapeworm	*Fimbriaria fasciolaris*	» Anterior portion of the body forms a folded expansion called pseudoscolex
Nodular tapeworm of ruminant	*Stilesia globipunctata*	» "Dumbbell shaped" uterus
Nodular tapeworm of poultry	*Raillietina echinobothrida*	» Causes nodular taeniasis in poultry

Dwarf tapeworm of dog	*Echinococcus granulosus*	» Smallest cestode of domestic animals » Metacestode stage is known as "hydatid cyst"
Dog sheep tapeworm	*Taenia ovis* *T. hydatigena*	» Vaccine: *T. ovis* 45W » *Cysticercus tenuicollis* (Bladderworm of *T. hydatigena)* is the most commonly found bladderworm in sheep and goat
Dog rabbit tapeworm	*T. pisiformis*	» *Cysticercus pisiformis* develop in peritoneum of rabbit and hare
Cat rat tapeworm	*T. taeniaformis*	» Cysticercus fasciolaris/ Strobilocercus
Caribou tapeworm	*T. krabbei*	» *Cysticercus tarandi* is found in muscle of reindeer
Branching tapeworm	*Hymenolepis cantaniana*	» Testis are three in number
Slender tapeworm of duck	*Hymenolepis lanceolata*	» Proglottids are wider than long
Thread like tapeworm	*Hymenolepis carioca*	» Slender, thread like reaching a length upto 8 cm
Large chicken tapeworm	*Raillietina tetragona*	» Size reaches around 20-25 cm
Broad headed poultry tapeworm	*Raillietina cesticillus*	» Beetles act as intermediate host
Wedge shaped tapeworm	*Amoebotaenia sphenoides*	» Earthworms act as intermediate host » Ovaries appear like bird wings
Saw tooth tapeworm	Choanotaenia infundibulum	» Saw wedge or funnel shaped appearance of segment

Nematodes

Common name	Scientific name	Remark
Guinea worm/Medina worm/Serpent worm/ Dragon worm	Dracunculus medinensis	» First parasite declared as eradicated » Anterior end possess a helmet » Females have no vulva
Lung worm of cattle	Dictyocaulus viviparous	» Dictol, "X" ray irradiated larvae vaccine is used for control » Causes Husk/ Hoose in cattle

Lung worm of sheep and goat/Large thread lungworm of sheep	Dictyocaulus filaria	» Difil, an gamma ray irradiated vaccine used earlier for control » Boot shaped spicule » Lies in bronchiole of sheep and goat » L-1 have small cuticular knob at anterior extremity
Red lungworm	Protostrongylus rufescens	» Tip of L-1 tail have wavy outline
Nodular lungworm/ Hair lungworm	Muellerius capillaris	» L1 tail have undulating tip & dorsal spine
Lung worm of swine	Metastrongylus apri M. salmi M. pseudotectus	» Eggs are heavy so do not recovered in floatation technique » Earthworm are intermediate host
Lung worm of horse and donkey	Dictyocaulus arnfieldi	» Donkeys are natural host but horses may get a natural infection
Lung worm of cat	Aleurostrongylus abstrusus	
Lung worm of rat	Angiostrongylus cantonensis	» Causes eosinophilic meningitis in man
Lung worm of dog	Filaroides osleri Oslerus osleri	» Worm lies in nodule formed at junction of trachea and bronchi in dog » L-1 stage have s shaped tail
Herring worm	Anisakis	» Eosinophilic granuloma in intestinal or stomach wall
Kidney worm of swine Giant Kidney worm	Stephanurus dentatus	» Release strongly like eggs in swine urine » Found in peri-renal fat, pelvis and wall of ureter » Rim of buccal capsule bears epaulettes » Earthworm are transport host » Gilts only policy is used for control
Kidney worm of dog	Dictyophyma renale	» Largest nematode found in dog » Cup shaped bursa without bursal rays » Have single spicule

Heart worm of dog	Dirofilaria immitis	» Mainly found in right ventricle of heart » Microfilaria are longer with straight tail and tapering head » Transmitted by mosquitoes
Stomach worm of horse	Habronema spp.	» *Musca* and *Stomoxys* act as Intermediate host » Causes cutaneous habronemiasis/ bursati/ summer sore
Stomach worm of dog and cat	Physaloptera preputialis	» Collar like cuticle projection » Cemented material around vulva
Peritoneal worm/ Abdominal worm of cattle	Setaria cervi Setaria digitata	» Research Model for filarial worm » Occur in peritoneal cavity of cattle
Abdominal worm of equine	Setaria digitata	» White slender worm in peritoneal cavity of equine
Caecal worm of poultry	Heterakis gallinarum	» Large spicule protrude from male worm » Strong posterior bulb and precloacal sucker » Found in caeca of fowl » Egg help in transmission of *Histomonas meleagridis*
Heartworm of poultry	Bhalfilaria ladami	» Discovered by Dr. Bhalerao
Eyeworm of cattle	Thelazia rhodesii T. gulosa T.skrjabini	» *Musca* is the intermediate host » Milky white worms with transverse cuticular striations
Eyeworm of poultry	Oxyspirura mansoni	» Occurs in nictitating membrane of poultry » Hourglass shaped oesophagus
Eyeworm of dog	Thelazia callipaeda T. californiensis	» Vulva is in oesophageal region
Eyeworm of equines	Thelazia lacrymalis	» Cuticle have fine striations at anterior end
Eyeworm of camel	Thelazia leesi	» Found in conjunctival sac of camel
African eyeworm/ Eyeworm of man	Loa loa Thelazia callipaeda T. californiensis	» Found in eyes, conjunctival sac and lachrymal duct of camel

Pinworm/Seat worm of man	Entrobius vermicularis	» Anal pruriris in children » Pin worm eggs are flattened on one side and convex on other side
Pin worm of equines/ False whipworm	Oxyuris equi	» Anal pruritis in equine » Rat tail appearance in horses » Pin shaped spicule » Site: Large intestine of equine
Whipworm	Trichuris sp.	» Single spicule in male » Anterior part narrow and posterior thicker
Trichina worm	Trichinella spiralis	» Copulatory spicule absent
Pin worm of fowl	Subulura brumpti	» Ascarid worm with indirect life cycle » Double bulb in oesophagus » Beetle and cockroach act as intermediate host
Gape worm of poultry/ Forked worm	Syngamus trachea	» Gaping behavior in poultry » Permanent copulation » Site: Trachea of fowl
Ascarid worm of poultry	Ascaridia galli	» Largest nematode of poultry
Gullet worm/Zig-zag worm/ Tailor stitch worm	Gongylonema pulchrum	» Cuticular thickening called bosses present on body surface » Found in oesophagus of ruminants
Brown stomach worm	Ostertagia spp. Teladorsagia spp.	» Larvae lies in gastric gland of Abomasums » Moracco leather appearance of Abomasums » Greenish colored faeces
Arrow headed worm of dog	Toxocara canis	» Responsible for VLM especially in children less than 5 years of age
Ascarid of cattle	Toxocara vitulorum	» Most common parasitic infection in buffalo calf » Transplacental as well as transcolostral transmission occur

Ascarid of pig	Ascaris suum	» Responsible for piglet pneumonia » Mc Lean county system used to control ascariasis in pigs » "Milk spots" are seen in liver of infected swine
Ascarid of equines	Parascaris equorum	» Megalohead (Large distinct head)
Threadworm of ruminant	Strongyloides papillosus	» Multiple route of transmission » Parasitic form shows parthenogenesis » Filamentous uterus is intertwined with intestine, giving contorted twisted thread appearance
Palisade worm/Large strongyle of equines	*Strongylus* spp.	» Buccal capsule bears leaf crown or corona radiate
Black scour worm/ Stomach hairworm	Trichostrongylus axei	» Dark diarrhoeic faeces is passed in sheep » "Ring worm like lesions" in abomasum
Bankrupt worm	Trichostrongylus colubriformis	» Huge economic loss is associated
Hookworm of cat	Ancylostoma tubaeformae	» Anterior exteremity is bent dorsally » Well-developed buccal capsule which is devoid of leaf crown » Buccal capsule armed with teeth or chitinous cutting plates
Hookworm of dog	Ancylostoma caninum Uncinaria stenocephalus	» Responsible for CLM in man
Hookworm of man	Necator americanus Ancylostoma duodenale	» Buccal capsule armed with teeth
Hookworm of sheep and goat	Bunostomum trigonocephalum Gaigeria pachyscelis	» Buccal capsule armed with chitinous cutting plates
Hookworm of cattle	Bunostomum phlebotomum Agristomum vryburgi	» Buccal capsule armed with chitinous cutting plates
Hookworm of pig	Globocephalus longemucornatus	» Buccal capsule is globular in shape with absence of cutting plates
Hookworm of elephant	Bathmostomum sangeri	» Blood sucking nematode

Nodular worm of cattle	Oesophagostomum radiatum	» In female, vagina is short, transverse, leading to kidney shaped organ called "Pars ejectrix" of the ovijector » Larvae are enclosed in nodules in large intestine
Nodular worm of sheep	Oesophagostomum columbianum	» Leaf crown is present in genera
Nodular worm of pig	Oesophagostomum dentatum Oesophagostomum brevicaudum	» The L4 can remain in the nodules or return to the intestinal lumen where they develop to the adult stage
Dapaong tumor worm (Kounkoul)	Oesophagostomum bifurcum	» Responsible for single nodule form of oesophagostomiasis
Nodular worm of dog	Gnathosoma spinigerum	» Gastric nodules
Watch spring like nematode	Cooperia curticei	» Peculiar posture
Wire worm/Stomach worm/Barber pole worm	Haemonchus contortus	» Inverted Y shaped dorsal ray » White ovary winding spirally on blood filled uterus
Oesophageal worm of dog	Spirocerca lupi	» Canine oesophageal sarcoma
Stomach worm of dog	Physaloptera praeputialis	» Cuticle in both sexes extend beyond the end of body
Thorny headed worm of pig	Macracanthorhynchus hirudinaceus	» Infect pig as well as human » Acanthor larva present
Acanthocephalan of dog	Oncocola canis	» Small intestine of dogs and cats » Lizard, birds or armadillos serve as paratenic host
Hairworms/ Threadworms	*Capillaria* spp.	» White filamentous worm
Bladderworm of dog	Capillaria plica	» Found in urinary bladder of dog
Hairworms of dogs and cats	Capillaria philippiensis	» Humans acquire infection by eating fish
Lungworm of dog and fox	*Capillaria aerophila* (*Eucoleus aerophila*)	» Male possess single spicule
Brisket thread worm	Onchocerca gibsoni	» Slender worm lie tightly coiled in brisket nodules

Neck thread worm	Onchocerca gutturosa	» Worms are found coiled in the fibrous tissue
Thin necked intestinal worm	*Nematodirus* sp.	» Anterior region thinner than posterior region » Spicule terminate to form species specific expansion » Largest strongyle egg and larva

Arthropods of Veterinary Importance

Arthropods	Common name
Bugs	
Common bed bug	*Cimex lectularius*
Tropical bed bug	*Cimex hemipterus*
Kissing bug/Triatomine bug/Conenose bugs/ Assassin bugs/Vampire bugs	*Triatoma* spp.
Common Indian cone-nosed bug	*Triatoma rubrofasciatus*
Flea	
Dog flea	*Ctenocephalides canis*
Cat flea	*Ctenocephalides felis*
Rabbit flea	*Spilopsyllus cuniculi*
Human flea	*Pulex irritans*
Human plague flea/Indian rat flea/Oriental rat flea/ Tropical rat flea/Black rat flea	*Xenopsylla cheopis*
Chiggoe flea/Jigger	*Tunga penetrans*
Stick tight flea of poultry	*Echidnophaga gallinacean*
Common flea of chicken	*Ceratophyllus gallinae*
Louse	
Shaft louse of poultry	*Menopon gallinae*
Large body louse of poultry	*Menacanthus stramineus*
Pigeon louse	*Columbicola columbae*
Wing louse of poultry and pheasants	*Lipeurus caponis*
Head louse of poultry	*Lipeurus heterographus*

Fluff louse of poultry/Smallest lice of poultry	*Goniocotes gallinae*
Large chicken louse	*Goniodes gigas*
Dog louse	*Trichodectes canis*
Cat louse	*Felicola subrostratus*
Sucking louse of dog	*Linognathus setosus*
Long nosed cattle louse	*Linognathus vituli*
Short nosed cattle louse	*Haematopinus eurysternus*
Biting louse of cattle/Red louse/Cattle chewing louse	*Damalinia bovis* *Bovicola bovis*
The little blue cattle louse/Sucking louse of cattle	*Solenopotes capillatus*
Sheep body louse/Sheep biting louse	*Damalinia ovis/ Bovicola ovis*
Face louse of sheep/Blue louse of sheep	*Linognathus ovillus*
The African blue louse of sheep	*Linognathus africanus*
Sheep foot louse	*Linognathus pedalis*
Large sucking louse of hogs	*Haematopinus suis*
Large sucking louse of buffalo	*Haematopinus tuberculatus*
Common louse of turkey/Large turkey lose/Feather louse of turkey	*Chelopistes meleagridis*
Biting louse of elephants	*Hematomyzus elephantis*
Foot louse of goat	*Linognathus stenopsis*
Human head louse	*Pediculus humanus capitis*
Human body louse	*Pediculus humanus humanus*
Pubic/Crab louse	*Phthirus pubis*
Flies	
Tse-Tse fly	*Glossina palpalis* *Glossina morsitans*
Sand fly/Owl midges/Moth fly	*Phlebotomus sergentipes* *Phlebotomus papatasi*
Marsh fly/Hippo fly/Elephant fly/Dance/Horse fly/Breeze fly/Gad fly	*Tabanus*
Stable fly	*Stomoxys*
Cleg fly/Brim/Stout fly	*Haematopota*

Punkies/No-see-ums/Biting midges	*Culicoides*
Sheep ked/Sheep tick	*Melophagus ovinus*
Pigeon fly/Louse fly of pigeon	*Pseudolynchia canariensis*
Black fly/Buffalo gnat/Turkey gnat	*Simulium spp.*
Potu flu	*Simulium indicum*
Ox warble/Common cattle grub/Heel fly	*Hypoderma lineatum*
Deer warble fly	*Hypoderma Diana*
Northern cattle grub	*Hypoderma bovis*
Blue bottle fly	*Calliphora vomituria*
Green Bottle fly	*Lucilia cuprina*
Blue-Green Bottle fly	*Chrysomyia bezziana*
Flesh fly	*Sarcophaga dux*
Old world flesh fly	*Wohlfahrtia magnifica*
House fly	*Musca domestica*
Face fly	*Muscą autumnalis*
Deer fly/Mangrove fly	*Chrysops dispar*
Screwworm fly	*Chrysomyia* sp.
Indian blowfly	*Chrysomyia bezziana*
Tumbu fly/Skin maggot fly	*Cordylobia anthropophaga*
Buffalo fly	*Haematobia exigua/ Lyperosia exigua*
Horn fly	*Haematobia irritans*
Tiger mosquito	*Aedes aegypti*
Latrine fly	*Fannia scalaris*
Foot maggot fly	*Booponus intosus*
Sheep nasal bot fly	*Oestrus ovis*
Horse nasal bot fly	*Rhinoestrus purpurensis*
Camel nasal bot fly	*Cephalopina titilator*
Horse bot fly	*Gasterophilus intestinalis*
Forest fly	*Hippobosca* sp.

Ticks of Veterinary Importance

Common name	Scientific name
Soft ticks (Argasidae)	
Soft tick of poultry/Fowl tampan/Fowl tick/ Poultry tick	*Argas persicus*
Eyeless tampan	*Ornithodorus moubata*
Eyed tampan	*Ornithodoros savignyi*
Spinose ear tick	*Otobius megnini*
Hard ticks (Ixodidae)	
Southern cattle tick/Tropical fever tick/Cattle tick	*Rhipicephalus (Boophilus) microplus*
North American tick/ Cattle fever tick	*Rhipicephalus (Boophilus) annulatus*
Blue tick	*Rhipicephalus (Boophilus) decoloratus*
Brown dog tick/Kennel tick/Tropical dog tick	*Rhipicephalus sanguineus*
Brown ear tick	*Rhipicephalus appendiculatus*
Brown tick	*Rhipicephalus pravus*
The glossy brown tick	*Rhipicephalus simus*
Red legged tick	*Rhipicephalus evertsi*
Brown ear tick	*Hyalomma excavatum*
Mediterranean tick	*Hyalomma marginatum*
Bont legged tick	*Hyalomma truncatum*
Rocky Mountain Wood tick	*Dermacentor andersoni*
American dog tick/Wood tick	*Dermacentor variabilis*
Tropical horse tick	*Dermacentor nitens*
Marsh tick	*Dermacentor reticulatus*
Castor bean tick/Sheep tick	*Ixodes ricinus*
Bont tick/Tropical African Bont tick	*Amblyomma hebraeum*
Lone star tick	*Amblyomma americanum*
Yellow dog tick	*Haemaphysalis leachi*

Mites of Veterinary Importance

Mites	Common name
Tropical fowl mite	*Ornithonyssus bursa*
Scaly leg mite of poultry	*Cnemidocoptes mutans*
Depluming itch mite	*Cnemidocoptes gallinae*
Red mite of poultry	*Dermanyssus galinnae*
Aoutat/Harvest mite/Large sized mite/ Chigger mite/ Velvet mite	*Trombicula autumnalis*
Follicular mite/Ciggar mite	*Demodex canis*
Dog itch mite/Scabies mite/Itch mite	*Sarcoptes scabies*
Ear mange mite of dog	*Otodectes cynotis*
Sheep scab mite	*Psoroptes ovis*
Cat mite	*Notoedres cati*
Itchy leg mite/Chotioptic mange mite	*Chorioptes bovis*
Rabbit Fur mite/Walking dandruff	*Cheyletiella parasitovorax*

Disease transmission potential of arthropods
(Includes vectors as well as intermediate host)

Arthropods	Disease transmitted
Cyclops	» Diphyllobothrium latum » Dracunculus medinensis » *Spirometra* sp. » *Gnathosoma* sp.
Crayfish	» Paragonimus westermanii
Cockroach	» Gongylonema neoplasticum » Spirocerca lupi » Hymenolepis diminuta » Oxyspirura mansoni » Macracanthorhynchus hirudinaceous
Grasshopper	» Eurytrema pancreaticum
Dragonfly niads	» *Prosthogonimus* sp.

Beetle	» Choanotaenia infundibulum » Hymenolepis nana » Raillietina cesticillus » Subulura brumpti
Ants	» *Raillietina* sp. » Cotugnia digonopora » Dicrocoelium dendriticum
Dog louse *(Trichodectes canis)*	» Dipylidium caninum
Kissing bugs *(Triatoma* sp.*)*	» Trypanosoma cruzi
Dog flea *(Ctenocephalides canis)*	» Dipylidium caninum
Cat flea *(Ctenocephalides felis)*	» Dipylidium caninum
European rat flea (*Ceratophyllus fasciatus*)	» *Rickettsia typhi* (Endemic typhus)
Psocid lice	» *Avitellina* sp. » Thysanosoma actinoides
Oribatid mites	» *Moniezia* sp. » *Anaplocephala* sp. » *Paranaplocephala* sp. » Mesocestoides lineatus
Glossina spp .(Tse-tse fly)	» Trypanosoma spp.
*Phlebotomus argentipes (*Sand fly*)*	» Leishmania donovani
Phlebotomus papatasii	» Leishmania tropica
Lutzomyia sp.	» Leishmania braziliensis
Tabanus	» Trypanosoma evansi
Stomoxys	» Trypanosoma evansi » Habronema majus
Hippobosca sp.	» Trypanosoma theileri » *Haemoproteus* sp.
Culicoides	» Blue tongue virus » Bovine ephemeral virus » African horse sickness virus » *Onchocerca* sp. » *Dipetalonema* sp. » Queensland itch
Melophagus ovinus (Sheep ked)	» Trypanosoma melophagium
Pseudolynchia canariensis	» Haemoproteus columbae

Simulium	» *Onchocerca* sp. » *Leucocytozoon* sp.
Musca domestica	» *Habronema* sp. » *Thelazia* sp. » Choanotaenia infundibulum » Stephalofilaria assamensis » Parafilaria bovicola » Poliomyelitis » Vibrio cholera
Aedes aegypti	» Yellow fever virus » Dengue fever virus » Rift valley fever virus » Plasmodium gallinacean » Wuchereria bancrofti » *Setaria spp.*
Anopheles sp.	» Setaria diigitata » Dirofilaria immitis » *Plasmodium* sp.
Culex sp.	» Japanese B encephalitis virus » West Nile fever virus » Equine encephalitis virus » Dirofilaria immitis » Wuchereria bancrofti » Plasmodium gallinacean
Rhipicephalus sanguineus	» Ehrlichia canis » Hepatozoon canis » Babesia canis » Bebesia equi » Babesia caballi » *Rickettsia* sp.
Ixodes sp.	» Babesia spp. » Anaplasma marginale » Coxiella burnetti » *Staphylococcus aureus* (Tick pyemia) » Ehrlichia phagocytophila » *Borrelia burgdorferi* (Lyme disease) » Louping ill virus » Tick borne encephalitis
Soft tick *(Argas persicus)*	» Anaplasma marginale » *Borrelia anserina* (avian spirochaetosis) » Aegyptianella pullorum

Ornithodorus moubata	» Theileria ovis » Anaplasma ovis » *Borrelia duttoni* (Relapsing fever) » B. anserine » Aegyptianella pullorum » *Coxiella burnetii* (Q fever) » African swine fever
Hyalomma anatolicum	» Theileria annulata » Theileria equi » Coxiella burnetti » Crimean-Congo Haemorrhagic fever virus
Boophilus annulatus	» Babesia bigemina
Amblyomma spp.	» *Cowdria ruminantium* (Heartwater disease) » *Rickettsia conori* (Tick bite fever) » *Rickettsia rickettsia* (Rocky mountain spotted fever) » *Francisella tulariensis* (tularaemia) » *Borrelia burgdorferi* (Lyme disease) » *Coxiella burnetti* (Q fever)

Antiparasitic Vaccine

Helminth vaccine	
Barbervax	1. Against Haemonchus spp. 2. Given in lambs as 5 s/c injections (1 ml each) at 6-week intervals 3. Protection lasts for 6 weeks after each dose
Cysvax	1. Against Taenia solium 2. Recombinant porcine cysticercosis vaccine.
Dictol/ Huskvac	1. Lung worm vaccine 2. Contains 1000 X-ray irradiated (40krds) Dictyocaulus viviparous larvae
Difil	1. Against Dictyocaulus filaria in sheep 2. It consist of γ-irradiated (50krds) L1 larvae
Arthropod Vaccine	
TickGARD	1. First successful commercial recombinant vaccine 2. No transmission of B. bigemina and reduced transmission of B. bovis by R. annulatus.

Gavac	1. Against ticks (Boophilus spp.) 2. Reduction in anaplasmosis and babesiosis 3. Also protection against H. dromedarii for camels
Protozoan vaccine	
Rakshavac T	1. Tissue culture attenuated vaccine 2. 5 x 10^6 attenuated schizont infected lymphoblast (ASIL) cells after 150 passages are used for immunization. 3. Site and dosage for inoculation is 3 mL s/c in mid-neck region 4. It provides protection for 3 year under confined condition and for lifetime if provided regular exposure of infection. 5. Vaccine is considered safe in pregnancy and can be injected in calves more than 2 months of age. 6. Stored as well as transport at -70^{0}C
Fel-O-Vax	1. Killed culture trophozoite vaccine for Giardiasis in cats
Toxovax/ Ovilis®	1. Live tachyzoites of laboratory adapted S48 strain of Toxoplasma gondii. 2. It limits the acute parasitemia and congenital transmission of toxoplasmosis. 3. Contains 2ml volume having >10^5 tachyzoites/ml 4. Protect for 2 lambing season
T-263	1. Chemically attenuated tissue cyst of Toxoplasma gondii to reduce shedding of oocyst in cats
TS-4	1. Chemically induced tachyzoites of temperature sensitive strain of Toxoplasma gondii which reduce the number of tissue cyst
Neoguard (Bovilis®)	1. Killed tachyzoite of Neospora caninum with spur adjuvant 2. The vaccination induces antibody at a high level which gives protection from abortion upto 1 year
Pirodog	1. A subunit vaccine for dog against Canine babesiosis. 2. It consists of exoantigens (soluble parasitic antigens, SPA) of B. canis along with Quill A adjuvant. 3. It provides protection for 6 months.
NobivacPiro	1. A subunit vaccine comprises of soluble parasite antigens (SPA) of B. canis and B. rossi supernatants of in vitro cultures and it gives 80 % protection for 6 months. 2. For B.canis, it is known as anti-disease vaccine because the antibody generated neutralizes the exo-antigens released by the parasite. 3. For B.rossi, it is known as anti-infection vaccine because it prevents the proliferation of the parasite

Mosquirivax	1. World's first malaria vaccine 2. The vaccine was engineered using genes from the repeat and T cell epitope in the pre-erythrocytic circumsporozoite protein (CSP) of the Plasmodium falciparum
Anaplaz	1. First anaplasmosis vaccine 2. Contain killed Anaplasma marginale, harvested from infected cattle. 3. Dose: 1 ml by s/c route
Anavac	1. Modified live vaccine, which is safe and effective when given to young cattle. 2. Dose: 2 mL i/v and is given at 6-12 month of age.
AMVAX™	1. It contains purified initial bodies of Fluorida strain of Anaplasma marginale 2. It is devoid of RBC and stored at -70°C and contraindicated in pregnancy.
Anaviv	1. It is live attenuated vaccine against Anaplasma marginale infection in cattle.
Leishmune®	1. Against Leishmania donovani infection in dogs 2. It is the first canine subunit parasitic vaccine to be commercialised in the market.
CaniLeish	1. Subunit vaccine against Leishmania infantum infection in dogs
LeishTec	1. Recombinant subunit vaccine against Leishmania chagasi
Trichguard	1. Inactivated or killed Tritrichomonas foetus vaccine for cattle 2. It is given @ 1-2 mL subcutaneously. 3. Safe in pregnant cows
TrichGuard® V5L	1. Against Tritrichomonas foetus. 2. It also provides proven protection against disease caused by Campylobacter fetus (vibrio) and five serovars of Leptospira.
Coccivac®-B	1. It is a live, sporulated oocyst vaccine against avian coccidiosis
Coccivac®-D	1. It is a live, sporulated oocyst vaccine against avian coccidiosis
Coccivac®-T	1. It is a live, sporulated oocyst vaccine against avian coccidiosis
Immucox	1. Oral coccidiosis vaccine of live oocysts of Eimeria spp. 2. This is a one-time vaccination. 3. It is a vaccine approved for water or gel delivery in the hatchery.
Paracox®-8	1. It is a live attenuated oral vaccine
Livacox	1. It is live attenuated coccidiosis vaccines for domestic poultry (Gallus domesticus). 2. Its range consists of LIVACOX® T for broilers and LIVACOX® Q for breeder and layer pullets.
CoxAbic	1. It is first commercially available killed subunit vaccine for poultry and contains purified antigens isolated from the macrogametocyte (sexual stage) of Eimeria maxima.

Multiple Choice Questions

1. Parasite which make short visit to their host to obtain nourishment are called as

a. Temporary parasite
b. Periodic parasite
c. Permanent parasite
d. Spurious parasite

2. Endoparasite found in a unusual location in the host are called

a. Erratic/ Aberrant parasite
b. Incidental parasite
c. Intercellular parasite
d. Intracellular parasite

3. Parasites with a narrow host range are termed as

a. Euryxenous b. Stenoxenous
c. Heteroxenous d. Monoxenous

4. Parasite that live in only one type of host during their normal life cycle are termed as

a. Euryxenous b. Stenoxenous
c. Heteroxenous d. Monoxenous

5. Parasites that live in the lumen of intestine or other hollow organs of the hosts are termed as

a. Coelozoic b. Saprozoic
c. Holozoic d. Histozoic

6. Parasites with a wide host range are termed as

a. Euryxenous b. Stenoxenous
c. Heteroxenous d. Monoxenous

7. Parasitic female which lay eggs containing fully developed larvae are termed as

a. Ovo-viviparous b. Viviparous
c. Oviparous d. Pupiparous

8. *Habronema* species is an example of

a. Ovo-viviparous
b. Viviparous
c. Oviparous
d. Pupiparous

9. Filarial worms are

a. Ovo-viviparous b. Viviparous
c. Oviparous d. Pupiparous

10. *Nosema helminthorum* in *Moniezia* and *Histomonas meleagridis* in the egg and larvae of *Heterakis gallinae* are example of

a. Pseudoparasite
b. Temporary parasite
c. Hyperparasite
d. Periodic parasite

11. Lice are the example of

a. Temporary parasite
b. Permanent parasite
c. Periodic parasite
d. None of the above

12. For *Balantidium coli*, pigs and horses act as

a. Carrier host
b. Reservoir host
c. Intermediate host
d. None of the above

13. For *Ascaridia galli*, earthworm act as

a. Carrier host b. Reservoir host
c. Transport host d. Paratenic host

14. Vectors in which parasite does not undergo development and transmit the parasites in a short period are called as

a. Biological vector
b. Mechanical vector
c. Natural vector
d. None of the above

15. Tropical pulmonary eosinophilia is mainly seen due to

a. Cercarial reaction b. Nematode larvae
c. Arthropods d. Pollen allergy

16. Association shown by *Entamoeba coli* and *Trichomonas spp.* in intestine of host animal is

a. Mutualism b. Symbiosis
c. Commensalism d. Parasitism

17. Thick blood smear cannot be used for avian and camel blood because of

a. High viscosity
b. Different proteins
c. Nucleated erythrocytes
d. Low ESR values

18. Parasite in which immature form are parasitic while adult or mature form is free living are termed as

a. Incidental parasite
b. Opportunistic parasite
c. Protelean parasite
d. Zoonotic parasite

19. What kind of association exists between ruminants and cellulose digesting rumen flora?

a. Mutualism b. Symbiosis
c. Commensalism d. Parasitism

20. Temporary association between two individuals in which there is no metabolic dependence is called

a. Predation b. Commensalism
c. Parasitism d. Phoresis

21. When an individual harbouring a parasite is reinfected with same species of parasite, it is termed as

a. Autoinfection
b. By pass infection
c. Superinfection
d. All of the above

22. When an infected individual act as source of reinfection in its own, the situation is termed as

a. Autoinfection
b. By pass infection
c. Superinfection
d. All of the above

23. Extracellular parasite is

a. *Babesia spp.*
b. *Theileria spp.*
c. *Anaplasma spp.*
d. *Trypanosoma spp.*

24. In 1893, *Boophilus annulatus* was identified as vector of *Babesia bigemina* by

a. Smith and Kilbourne
b. Thomas and Leukart
c. Bruce
d. Loss

25. Preservative used for sporulation of coccidian oocyst is

a. Methyl alcohol
b. Ethylene glycol
c. 10% formalin
d. 2.5% Potassium dichromate solution

26. Eyeworm of poultry is

a. *Thelazia californensis*
b. *Setaria equi*
c. *Oxyspirura mansoni*
d. *Thelazia rhodesii*

27. Heartworm of poultry is

a. *Dirofilaria immitis* b. *Spirocerca lupi*
c. *Bhalfilaria ladami* d. *Onchocerca gibsoni*

28. Biological control measures of snail includes

a. Larvae of fire flies and marsh flies
b. Giant water bug
c. Ducks
d. All of the above

29. Nocturnal periodicity is observed in the microfilariae of

a. Wuchereria bancrofti b. Loa loa
c. Setaria equi d. Onchocerca armillata

30. Immunity maintained by the host after complete elimination of parasite is known as

a. Sterile immunity
b. Preimmunity
c. Concomitant immunity
d. None of the above

31. Immunity that acts against invading larval stages but not against an existing infection is called

a. Sterile immunity
b. Preimmunity
c. Concomitant immunity
d. None of the above

32. The term "Incomplete immunity" is used for
a. Sterile immunity
b. Concominant immunity
c. Premunition
d. Autoimmunity

33. Nematodes are difficult to stain permanently because of
a. Impervious cuticle
b. Accelar nature of cuticle
c. Thickness of cuticle
d. All of the above

34. Floatation technique is used for the concentration of
a. Trematode and cestode eggs
b. Nematode and cestode eggs
c. Trematode and Nematode eggs
d. All of the above

35. Specific gravity of nematode eggs lies in the range
a. 1.05-1.15 b. 1.15-1.25
c. 1.25-1.35 d. 1.35-1.45

36. Majority of trematodes eggs can be identified based upon presence of
a. Caudal knob
b. Differentiated embryonic mass
c. Operculum
d. Thick shell

37. The quantitative faecal examination is not performed for
a. Trematode eggs b. Cestode eggs
c. Nematode eggs d. All of the above

38. The third stage larvae of strongyle nematodes are recovered using
a. Coproculture
b. Baermann's technique
c. Stoll's technique
d. Modified Mc Master counting technique

39. Which of the following nematode egg is not recovered by floatation technique?
a. *Toxocara* spp.
b. *Metastrongylus* spp.
c. *Haemonchus* spp.
d. *Oxyuris* spp.

40. Ticks can be preserved in natural colours by dropping them in a solution of 10% formalin containing
a. Acetic acid
b. Copper sulphate
c. Chloroform
d. Hydrochloric acid

41. Moulting medium for preparation of permanent mount of helminth parasites is
a. Canada Balsam
b. Glycerin gelatin
c. Dibutyl phthalate xylene
d. All of the above

42. Immunity to superinfection due to the presence of residual parasite is termed
a. Acquired immunity
b. Innate immunity
c. Premunity
d. Sterile immunity

43. Parasites with two or more hosts are called
a. Hypĕrparasite b. Heteroxenous
c. Monoxenous d. Stenoxonous

44. A quantitative faecal examination procedure involving a special counting chamber is
a. Stoll's technique
b. Willi's technique
c. Lane's technique
d. Mc Master technique

45. The suitable medium for preservation and temporary mounting for identification of small insects, arthropods and mites is
a. Berlese fluid
b. 70% alcohol
c. Acetic alum carmine
d. 5% alcohol

46. A smaller organism, which live in or on the another bigger organism and metabolically depend upon it for food and shelter is called
a. Parasite
b. Symbiont
c. Commensal
d. Mutualist

47. The method used for separation of non-migratory larvae is called as
a. Petri dish culture
b. Bottle culture
c. Baermann's Technique
d. Harada-Mori Test tube culture

48. A solution commonly used for floating helminthic eggs is
a. Saturated salt (NaCl)
b. Saturated sugar (Sucrose)
c. Magnesium sulphate
d. 33% Zinc Sulphate

49. The period between the time of infection of the host and onset of clinical symptoms is
a. Prepatent period
b. Patent period
c. Biological incubation period
d. Incubation period

50. A parasite that lives on another parasite is called as
a. Pseudoparasite
b. Specific parasite
c. Spurious parasite
d. Hyperparasite

51. The period between infection of host and the presence of parasitic stages in the tissues and/or excretions is called
a. Patent period
b. Clinical period
c. Incubation period
d. Prepatent period

52. The parasite which requires more than one host to complete its lifecycle is called
a. Euryxenous parasite
b. Heteroxenous parasite
c. Stenoxenous parasite
d. Monoxenous/Homoxenous

53. Host which harbours sexually mature stages of parasites is called as
a. Definitive host
b. Transport host
c. Intermediate host
d. Paratenic host

54. Host which harbours residual parasite in a latent phase without showing clinical symptoms of disease is called as
a. Reservoir host
b. Transport host
c. Carrier host
d. Paratenic host

55. Host in the body of which immature stages are encapsulated in the tissues are termed as
a. Carrier host b. Reservoir host
c. Paratenic host d. Transport host

56. Host which has a light infection with some parasites but is not harmed because of previous exposure and resultant immunity and serve as source of infection is called
a. Carrier host b. Reservoir host
c. Paratenic host d. Transport host

57. Reproduction by young or larval form is known as
a. Parthenogenesis b. Metagenesis
c. Paedogenesis d. Heterogenesis

58. The process in which parasite multiplies asexually by division of nucleus followed by cytoplasm is called as
a. Schizogony b. Syngamy
c. Gametogony d. Sporogony

59. Nodular tapeworm of poultry is
a. Railleitina cesticillus
b. Raillietina echinobothrida
c. Hymenolepis carioca
d. R. tetragona

60. Most dangerous tapeworm of poultry is
a. Davainea proglottina
b. Raillietina echinobothrida
c. Hymenolepis carioca
d. Cotugnia digonophora

61. "Double pored tapeworm" of dog is
a. *Moniezia* spp.
b. *Cotugnia* spp.
c. *Dipylidium caninum*
d. *Diphyllobothrium latum*

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b. *Cotugnia* spp.
c. *Dipylidium caninum*
d. *Diphyllobothrium latum*

62. Anal pruritis shown by dragging of anus against the ground in dog is caused by
a. Dipylidium caninum
b. Echinococcus granulosus
c. Taenia hydatigena
d. Taenia multiceps

63. Neurocysticercosis in man is caused by
a. Hydatid cyst
b. Cysticercus cellulosae
c. Cysticercus bovis
d. Coenurus cerebralis

64. "Bunch of grape" like ovaries are found in
a. *Dipylidium caninum*
b. *Amoebotaenia sphenoides*
c. *Davainea proglottina*
d. All of the above

65. Casoni's test is used for the diagnosis of
a. Cysticercosis
b. Hydatidosis
c. Trichomoniasis
d. Brucellosis

66. Intermediate host of *Dipylidium caninum* is
a. Dog flea and louse
b. *Hippobosca maculata*
c. *Demodex spp.*
d. *Rhipicephalus sanguineus*

67. Gid, sturdy or "staggers" in sheep is caused by
a. Hydatid cyst
b. *Coenurus cerebralis*
c. *Cysticercus tenuicolis*
d. Tetrathyridium

68. Smallest tapeworm of poultry is
a. Davainea proglottina
b. Raillietina echinobothrida
c. R. cesticillus
d. Cotugnia digonophora

69. Largest tapeworm of poultry is
a. Davainea proglottina
b. Raillietina echinobothrida
c. Raillietina tetragona
d. Cotugnia digonophora

70. "Hammer" shaped hook is present in
a. *Dipylidium caninum*
b. *Amoebotaenia sphenoides*
c. *Davainea proglottina*
d. All of the above

71. "Sickle" shaped hook is present in
a. *Taenia* spp
b. *Moniezia* spp.
c. *Dipyllidium* spp.
d. *Davainea* spp.

72. "Measly pork" is caused by
a. *T. solium*
b. *T. saginata*
c. *T hydatigena*
d. *T. multiceps*

73. Largest tapeworm of dog is
a. Dipyllidium caninum
b. Diphyllobothrium latum
c. Echinococcus granulosus
d. Taenia ovis

74. Smallest tapeworm of dog is
a. Dipyllidium caninum
b. Diphyllobothrium latum
c. Echinococcus granulosus
d. Taenia ovis

75. "Cooked rice grain" like gravid segments are seen in infection of
a. *Moniezia expansa*
b. *Stilesia* spp.
c. *Avitellina* spp.
d. *Thysaniezia giardi*

76. Infection of *Dipylidium caninum* in dog occurs due to accidental ingestion of
a. *Trichodectes canis*
b. *Ctenocephalides canis*
c. Both the above
d. None of the above

77. "Snoring disease" in cattle is caused by
a. *Linguatula serrata*
b. *Spirocerca lupi*
c. *Schistosoma nasale*
d. *Oestrus ovis*

78. Fibrosis and atrophy of pancreas is caused by
a. *Dicrocoelium dendriticum*
b. *Eurytrema pancreaticum*
c. *Explanatum explanatum*
d. *Cotylophoron cotylophorum*

79. The common mode of tansmission of schistosomiasis is by
a. Skin penetration
b. Oral route
c. Coitus
d. None of the above

80. Basic unit of excretory system in trematodes is
a. Flame cells b. Cuticle
c. Green glands d. None of the above

81. Radia stage is absent in the life cycle of
a. *Fasciola gigantia*
b. *Paramphistomum cervi*
c. *Schistosoma nasalis*
d. All of the above

82. A parasite in which adults are almost non pathogenic but immature stages are plug feeders of mucosa and causes haemorrhagic duodenitis in ruminants is
a. *Paramphistomum cervi*
b. *Moniezia expansa*
c. *Schistosoma incognitum*
d. *Toxocara vitulorum*

83. "Cercaria pigmentata" is found in
a. Paramphistomes b. Schistosomes
c. Lung flukes d. Cestodes

84. Paired trematode parasite found in the lung is
a. Dicrocoelium sp. b. Paragonimus sp.
c. Opisthorchis sp. d. Schistosoma sp.

85. Eggs of trematodes are generally operculated with the exception of
a. Opisthorchis tenuicollis
b. Schistosoma nasale
c. Fasciola hepatica
d. Prosthogonimus ovatus

86. Parasite seen in intra hepatic bile ducts of cattle is
a. *Ascaris suum*
b. *Fasciola hepatica*
c. *Stephanurus dentatus*
d. *Spirocerca lupi*

87. "Kidney shaped ovaries" are found in
a. Dipyllidium caninum
b. Diphyllobothrium latum
c. Echinococcus granulosus
d. Taenia ovis

88. Lancet liver fluke is
a. Opisthorchis tenuicollis
b. Clonorchis sinensis
c. Dicrocoelium dendriticum
d. Fasciola hepatica

89. Slime balls are seen in life cycle of
a. Opisthorchis tenuicollis
b. Clonorchis sinensis
c. Dicrocoelium dendriticum
d. Fasciola hepatica

90. Sparganum is
a. Procercoid
b. Pleurocercoid
c. Cysticercoid
d. None of the above

91. Hepatitis cysticercosa is caused by
a. *C. cellulosae*
b. *C. bovis*
c. *C. tenuicollis*
d. *Coenurus cerebralis*

92. Presence of "lappets" behind each sucker is a feature of
a. *Moniezia expansa*
b. *Anaplocephala perfoliata*
c. *Anaplocephala magna*
d. *Taenia solium*

93. Phenomenon of "Hepatic Shift" is seen in
a. Amphistomosis
b. Schistosomiasis
c. Echinococcus
d. Fasciolosis

94. Auto infection is seen in

a. *Taenia solium*
b. *Strongyliodes stercoralis*
c. *Capillaria philippinensis*
d. All of the above

95. Body cavity is absent in

a. Nematodes
b. Insects
c. Arachinids
d. Trematodes

96. In trematodes, the excretory function is carried out by

a. Excretory bladder
b. Flame cells
c. Nephridia
d. Testis

97. In *Dicrocoelium dendriticum*, definitive host acquires infection by

a. Ingestion of metacercaria in the water
b. Ingestion of metacercaria along with the vegetation
c. Ingestion of infected ants
d. Skin penetration by the cercaria

98. Redial stage is absent in

a. *Dicrocoelium dendriticum*
b. *Fasciola* spp.
c. *Schistosomes*
d. Both a and c

99. Intestinal fluke of elephant is

a. *Paragonimus westermani*
b. *Bivitellobilharzia nairi*
c. *Protofasciola robusta*
d. None of the above

100. Fluke found in the bile ducts of elephantis

a. Paragonimus westermani
b. Bivitellobilharzia nairi
c. Protofasciola robusta
d. Fasciola jacksoni

101. Intermediate host of *Prosthogonimus* spp.is

a. Dragonfly naiad
b. Butterfly moths
c. Nymphal stage of *Damalinia* spp.
d. *Culicoides*

102. Laying of leathery eggs in chicken is associated with

a. Heterakis gallinarum
b. Raillietina spp.
c. Prosthogonimus spp.
d. Syngamus trachea

103. A drug of choice for acute fasciolosis is

a. Diamphinethide
b. Rafoxanide
c. Oxyclozanide
d. Nitroxynil

104. The metacercaria of *Fasciolopsis buski* found in

a. Water chest nuts
b. Leaves of water plants
c. Grass blades
d. Water melons

105. Both redial and metacercarial stages are absent in

a. *Prosthogonimus* spp.
b. *Schistosoma* spp.
c. *Dicrocoelium* spp.
d. *Notocotylus* spp.

106. Amphistome found in the liver is

a. Gigantocotyle explanatum
b. *Gastrothylax* spp.
c. *Paramphistomum cervi*
d. *Cotylophoran* spp

107. The cercaria of an amphistome is called as

a. Cercaria vitrina
b. Cercaria pigmentosa
c. Gymnocephalus cercaria
d. Furcocercus cercaria

108. The cercaria of Schistosomes is called as

a. Gymnocephalus cercaria
b. Xiphidiocercus cercaria
c. Furcocercus cercaria
d. Lobocercus cercaria

109. Cercarial dermatitis in man is caused by

a. Amphistome cercaria
b. Cercaria of avian Schistosomes
c. Gymnocephalus Cercaria
d. Cercaria of *Schistosoma nasale*

110. Lithium antimony thiomaleateis a drug of choice for

a. Acute fasciolosis
b. Nasal Schistosomosis
c. Amphistomosis
d. Toxocariosis in cattle

111. Metameric segmentation of the body is seen in

a. Trematode b. Cestodes
c. Nematodes d. Acanthocephala

112. In cotyloda, eggs are continuously discharged from proglottid through uterine pore, when egg production has ceased, chains of exhausted proglottids detached from strobila, phenomenon is termed as

a. Apolysis
b. Thysanus
c. Pseudoapolysis
d. All of the above

113. Gravid proglottids are detached, passed out in faeces and eggs are set free by disintegration of proglottids are termed as

a. Apolysis b. Thysanus
c. Pseudoapolysis d. All of the above

114. Cestodes have direct life cycle except in

a. Anoplocephala magna
b. Taenia solium
c. Hymenolepis nana
d. Echinococcus granulosus

115. Microcercus cercaria is seen in case of

a. Paragonimidae b. Prosthogonimidae
c. Dicrocoelidae d. Fasciolidae

116. Unicellular glands which surrounds the ootype in trematodes is

a. Vitelline gland b. Mehli's gland
c. Shell gland d. Prostate gland

117. Cercaria vitrina is seen in the life cycle of

a. Fasciola hepatica
b. Dicrocoelium dendriticum
c. Paragonimus westermanii
d. Prosthogonimus ovatus

118. Number of cercariae clump together by gelatinous mass to form a slime ball is

a. 50-100 b. 200-400
c. 800-1600 d. 2400-4800

119. Poultry fluke in which vitellaria form grape like bunching in the lateral field is

a. Paragonimus b. Prosthogonimus
c. Echinostoma d. Euryhelmis

120. Oviductal fluke of poultry is

a. Paragonimus b. Prosthogonimus
c. Echinostoma d. Euryhelmis

121. Intermediate host of *Fasciola gigantica* in India is

a. Lymnea auricularia
b. Lymnea truncatula
c. Indoplanorbis exustus
d. Gyraulus convexiusculus

122. Bottle jaw in ruminants occurs due to

a. Fascioliasis b. Paramphistomiasis
c. Haemonchosis d. All of the above

123. Characters of *Fasciola* eggs are

a. Yellow colour
b. Indistinct operculum
c. Indistinct embryonic mass
d. All of the above

124. Morphological features of amphistome eggs are

a. Transparent shell
b. Distinct operculum and embryonic mass
c. Caudal knob
d. All of the above

125. Molluscicides used for control of snail are

a. Bayluscide/ Frescon
b. N-tritylmorpholine
c. Copper sulphate
d. All of the above

126. Adult fluke in the small intestine of sheep is

a. Dicrocoelium dendriticum
b. *Skrjabinotrema ovis*
c. *Fasciola gigantica*
d. Ogmocotyle indica

127. Rusty coloured sputum is observed in case of

a. Collyriclum faba
b. Paragonimus westermanii
c. Dicrocoelium dendriticum
d. Skrjabinotrema ovis

128. Conical flukes/ rumen flukes are

a. Paramphistomum cervi
b. Fasciola gigantica
c. Dicrocoelium dendriticum
d. Skrjabinotrema ovis

129. Biliary amphistomiasis is caused by

a. Gigantocotyle explanatum
b. Ceylonocotyle streptocoelium
c. Calicophoron calicophorum
d. Fischoederius elongatus

130. Bottle jaw along with profuse fluid foetid diarrhoea in sheep is seen in case of

a. Dicrocoeliasis
b. Fascioliasis
c. Amphistomiasis
d. All of the above

131. Hyperacute colitis in horses is caused by

a. *Gastrodiscus aegyptiacus*
b. *Gastrodicoides hominis*
c. *Pseudodiscus collinsi*
d. All of the above

132. Spindle shaped eggs are seen in case of

a. Schistosoma nasale
b. Schistosoma spindale
c. Schistosoma haematobium
d. Schistosoma mekongi

133. Napolean hat shaped eggs are seen in case of

a. Schistosoma nasale
b. Schistosoma spindale
c. Schistosoma haematobium
d. Schistosoma mekongi

134. Boomerang shaped eggs are seen in case of

a. Schistosoma nasale
b. Schistosoma spindale
c. Schistosoma haematobium
d. Schistosoma mekongi

135. Parasite in which adult resides in posterior mesenteric artery and eggs are laid in the walls of bladder, urethra and ureter is

a. Schistosoma nasale
b. Schistosoma mattheei
c. Schistosoma haematobium
d. Schistosoma mekongi

136. Parasite found in mesenteric veins of pig and dog in Indian subcontinent is

a. Schistosoma nasale
b. Schistosoma mattheei
c. Schistosoma incognitum
d. Schistosoma mekongi

137. Katayama disease is caused by

a. Schistosoma nasale
b. Schistosoma mattheei
c. Schistosoma japonicum
d. Schistosoma mekongi

138. Most pathogenic stage of rumen fluke and liver fluke is

a. Adult
b. Immature flukes
c. Egg
d. Larvae

139. Most pathogenic stage of blood fluke is

a. Adult
b. Immature flukes
c. Egg
d. Larvae

140. Clay pipe stem fibrosis of portal triads is observed in heavy infection of

a. Amphistomes
b. Schistosomes
c. Paragonimus sp.
d. All of the above

141. Concommitant immunity if flukes can be exemplified with

a. Amphistomes
b. Schistosomes
c. Paragonimus
d. Prosthogonimus

142. Mechanism of anaemia in schistosomiasis is

a. Haemodilutuion
b. Haemorrhage
c. Dyshaemopoiesis
d. All of the above

143. "Cucumber seed shaped" motile gravid segment seen in the dog faeces denotes infection of
a. *Dipyllidium caninum*
b. Diphyllobothrium latum
c. Spirometra mansoni
d. Taenia ovis

144. Largest tapeworm of equine is
a. *Anaplocephala perfoliata*
b. *Anaplocephala magna*
c. *Paranaplocephala mammilana*
d. None of the above

145. Smallest tapeworm of equine is
a. *Anaplocephala perfoliata*
b. *Anaplocephala magna*
c. *Paranaplocephala mammilana*
d. None of the above

146. Most pathogenic tapeworm of equine is
a. *Anaplocephala perfoliata*
b. *Anaplocephala magna*
c. *Paranaplocephala mammilana*
d. None of the above

147. Sheep tapeworm having interproglottidal gland saccular and expand throughout width of the segment is
a. Moniezia expansa
b. Moniezia benedeni
c. Avitellina centripunctata
d. Stilesia hepatica

148. Cattle tapeworm having interproglottidal gland linear and restricted in the middle of the segment is
a. Moniezia expansa
b. Moniezia benedeni
c. Avitellina centripunctata
d. Stilesia hepatica

149. Double pored tapeworm of ruminant is
a. *Moniezia expansa*
b. *Moniezia benedeni*
c. *Thysanosoma actinoides*
d. All of the above

150. Gastropod mollusc are the intermediate host for
a. Davainea proglottina
b. Raillietina echinobothrida
c. Cotugnia digonophora
d. All of the above

151. "Dumbbell" shaped uterus is seen in
a. Stilesia hepatica
b. Avitellina centripunctata
c. Thysaniezia giardia
d. Thysanosoma actinoides

152. Intermediate host of *Moniezia* spp. is
a. Psocid lice
b. Oribatid mite
c. Beetle
d. Ants

153. Intermediate host of *Avitellina* spp is
a. Psocid lice
b. Oribatid mite
c. Beetle
d. Ants

154. Hammer shaped hooks are seen in
a. *Davainea proglottina*
b. *Raillietina echinobothrida*
c. *Cotugnia digonophora*
d. All of the above

155. Bottle shaped hooks on rostellum and bird wing like ovary is seen in case of
a. Choanotaenia infundibulum
b. Amoebotaenia cuneata
c. Davainea proglottina
d. Raillietina tetragona

156. "Horse shoe" shaped ovary is seen in case of
a. Echinococcus granulosus
b. Taenia solium
c. Taenia saginata
d. Dipyllidium caninum

157. Dwarf tapeworm of rat is
a. Hymenolepis carioca
b. Hymenolepis diminuta
c. Taenia taeniaformis
d. None of the above

158.Nodular taeniasis in poultry is caused by

a. *Raillietina echinobothridia*
b. *Raillietina tetragona*
c. *Amoebotaenia sphenoides*
d. *Cotugnia digonopora*

159.Intermediate host of *Raillietina tetragona* is

a. Beetles b. *Musca* spp.
c. Earth worms d. ants

160.Musca spp. and beetles are act as intermediate host for

a. Choanotaenia infundibulum
b. Raillietinacesticillus
c. Cotugniadigonopora
d. Amoebotaenia spp.

161.Characteristis "boot shaped spicule" is found in

a. Dicyocaulus filaria
b. Ostertagia trifurcata
c. Nematodirrus batus
d. Haemonchus contortus

162."Moracco leather" appearance is seen in

a. *Diphyllobothrium latum*
b. *Trichostrongylus axei*
c. *Parafilaria bovicola*
d. *Ostertagia ostertagi*

163.Balling up in horse is seen in infection with

a. Parascaris equorum
b. Strongylus vulgaris
c. Oxyuris equi
d. Strongylus edentatus

164."Pimply gut" in cattle is caused by

a. *Moniezia expansa*
b. *Toxocara vitulorum*
c. *Oesohogostomum radiatum*
d. *Oesohogostomum columbianum*

165.Mud colour faeces in buffalo calf is seen in case of

a. Ostertagia ostertagi
b. Trichostrongylus axei
c. Toxocara vitulorum
d. Haemonchus placei

166. "Hump sore" in cattle is caused by

a. Habronema majus
b. Stephanofilaria assamensis
c. Draschia megastoma
d. Oxyuris equi

167."Rat tailed" ungroomed appearance of horse tail is observed in infection with

a. Parascaris equorum
b. Strongylus vulgaris
c. Oxyuris equi
d. Strongylus edentatus

168.*Oxyspirura mansoni* **is**

a. Pin worm of horse
b. Eye worm of poultry
c. Eye worm of cattle
d. None of the above

169.Tracheal worm of poultry is

a. *Trachealis bronchi* b. *Heterakis galli*
c. *Syngamus trachea* d. *Trachelis pulmoni*

170.Verminous dermatitis is characterized by small papules which coalesce to form large lesions in the pinnae of ear of buffalo, covered with crests is caused by

a. *Thelazia rhodesii*
b. *Stephanofilaria zaheeri*
c. *Chabertia sp*
d. *Gongylonema pulchrum*

171.Bleeding spots in cattle is caused by

a. *Parafilaria haemorrhagica*
b. *Seteria digitata*
c. *Parafilaria bovicola*
d. *Dirofilaria immitis*

172.Subserosal nodules in equine caecum and colon is observed in case of

a. *Strongylus equinus* b. *Strongylus vulgaris*
c. *Strongylus edentatus* d. All of the above

173.Technique used for the concentration of microfilariae from blood sample is

a. Wilson technique
b. Knott technique
c. Floatation technique
d. Concentration technique

174. Latest and highly rapid technique for determination of anthelmintic resistance of multiple samples is
a. Allele specific PCR
b. PCR-RFLP
c. Pyrosequencing
d. Egg hatch assay

175. VLM, CLM and OLM is caused by
a. Toxocara canis
b. Ancylostoma caninum
c. Gnathostoma spinigerum
d. Taenia taeniformis

176. "Cooly's itch" or "Ground itch" is caused by
a. Toxocara canis
b. Stephanurus dentatus
c. Ancylostoma caninum
d. Dirofilaria immitis

177. The term "halzoun" and "marrara" is associated with
a. Sparganosis
b. Linguatulosis
c. CLM
d. VLM

178. CLM (Cutaneous larva migrans) is caused by
a. Toxocara canis
b. Ancylostoma caninum
c. Gnathostoma spinigerum
d. Taenia taeniformis

179. Parasitic catarrhal bronchitis in sheep is caused by
a. *Dictyocaulus filaria*
b. *Dictyocaulus viviparus*
c. *Dictyocaulus arnfieldi*
d. *Metastrongylus apri*

180. Parasitic bronchitis in calf (Husk/hoose) is caused by
a. Dictyocaulus viviparus
b. Dictyocaulus filaria
c. Dictyocaulus arnfieldi
d. Dictyocaulus cameli

181. "Rose thorn shaped hooks" on the rostellum is a character of
a. Taenia sp.
b. Raillietina sp.
c. Opisthorchis sp.
d. Dipylidium sp.

182. "Epaulettes" are present in
a. *Stephanurus dentatus*
b. *Strongylus vulgaris*
c. *Strongylus edentatus*
d. *Haemonchus contortus*

183. Kumri or Cerebrospinal nematodiasis is caused by
a. Setaria digitata
b. Stephanurus dentatus
c. Ancylostoma caninum
d. Dirofilaria immitis

184. "Fringed tapeworm" is
a. *Moniezia expansa*
b. *Thysanosoma actinioides*
c. *Stilesia hepatica*
d. *Dirofilaria immitis*

185. Parthenogenetic females are found in
a. Strongylus sp.
b. Oesophagostomum sp.
c. Strongyloides sp.
d. None of the above

186. "Black scour worm" is
a. *T. colubriformis*
b. *H. contortus*
c. *O. ostertagi*
d. *D. latum*

187. *Musca domestica* is the vector of
a. *Habronema muscae*
b. *Draschia megastoma*
c. Both a and b
d. None of the above

188. Lungworm of cat is
a. Aleurostrongylus abstrusus
b. Filaroides osleri
c. Oslerus osleri
d. Filaroides hirthi

189. "Barrel shaped" eggs with bipolar plugs is seen in

a. Toxocara sp. b. Moniezia sp.
c. Strongyle sp. d. Trichuris sp.

190. Pinworm of rabbit is

a. Passalurus ambiguus
b. Syphacia muris
c. Syphacia obvelata
d. Aspicularis tetraptera

191. Gastric adenoma in horse and mules is caused by

a. *Hebronema megastoma*
b. *Strongylus vulgaris*
c. *Spirocerca lupi*
d. *Gongylonema neoplasticum*

192. Lumbar paralysis in sheep and goat is caused by

a. Setaria digitata
b. Stephanurus dentatus
c. Ancylostoma caninum
d. Dirofilaria immitis

193. Wobbles in young horses is caused by

a. Sarcocystis neurona
b. Stephanurus dentatus
c. Ancylostoma caninum
d. Dirofilaria immitis

194. Site of predilection of *Dirofilaria immitis* is

a. Right ventricle
b. Pulmonary artery
c. Both of the above
d. None of the above

195. Intermediate host for *Dirofilaria immitis* is

a. Mosquitoes
b. Fleas
c. Both of the above
d. None of the above

196. Sausage shape L2 larva is seen in life cycle of

a. Dirofilaria immitis
b. Wuchereria bancrofti
c. Loa loa
d. Setaria equi

197. Meischer's tube is

a. Elongated cysts of *Sarcocystis* sp. in muscle fibre
b. Tachyzoites of *Sarcocystis* sp. in muscle fibres
c. Elongated cysts of *Toxoplasma* sp. in muscle fibre
d. Tachyzoites of *Toxoplasma* sp.

198. Largest round worm of poultry is

a. *Capillaria annulata*
b. *Hetrakis gallinarum*
c. *Ascaridia galli*
d. *Capillaria contorta*

199. Laboured breathing or Gape is characteristic of

a. Avian influenza
b. Histomoniasis
c. Syngamiasis
d. Fowl pox

200. Caecal worm of poultry is

a. Ascaridia galli
b. Heterakis gallinarum
c. Eimeria tenella
d. Syngamus trachea

201. Common lung worm of equines is

a. Dictyocaulus viviparus
b. Capillaria aerophila
c. Muellerius capillaris
d. Dictyocaulus arnfieldi

202. Autoheterogenous life cycle occurs in

a. Trichinella
b. Fasciola
c. Trichuris
d. None

203. Organ needs to be examined for *Trichinella spiralis* in routine PM examination is

a. Lungs b. Diaphragm
c. Spleen d. Intestine

204. "Summer sores" or cutaneous Habronemiasis is caused by

a. *Habronema megastoma*
b. *Stephanofilaria assamensis*
c. *Onchocerca gibsoni*
d. *Setaria digitata*

205. "Leg sore" is caused by
a. Habronema megastoma
b. Stephanofilaria assamensis
c. Stephanofilaria zaheeri
d. Stephanofilaria Kaeli

206. Giant kidney worm of dog is
a. Diphyllobothrium latum
b. Dictyophyma renale
c. Capillaria plica
d. Stephanurus dentatus

207. Urine is examined for the diagnosis of eggs of
a. *Dictyophyma renale* b. *Capillaria plica*
c. *Stephanurus dentatus* d. All the above

208. 'Milk spots' in the liver of swine is caused by
a. Ascaris suum
b. Stephanurus dentatus
c. Macrocanthorhynchus hirudinacous
d. Metastrongylus

209. High mortality among buffalo calves is due to
a. Toxocara vitulorum
b. Paracooperia nodulosa
c. Setaria digitata
d. Oesophagostomum radiatum

210. Anal pruritus in horse is caused by
a. Oxyuris equi
b. Strongylus vulgaris
c. Habronema spp.
d. Anoplocephala perfoliata

211. Eggs of *Heterakis gallinarum* play a major role in the transmission of protozoan parasite
a. *Trichomonas gallinae*
b. *Eimeria* spp.
c. *Histomonas meleagridis*
d. *Plasmodium gallinaceum*

212. "Mesenteric aneurysm" and "Arteritis" in horses is due to
a. Strongylus vulgaris
b. Habronema spp.
c. Parascaris equorum
d. Larvae of Setaria digitata

213. The protein losing gastropathy in horse is associated with
a. Trichostrongylus axei
b. Habronema spp.
c. Strongydus vulgaris
d. Anoplocephala perfoliata

214. Self cure phenomenon in sheep is associated with
a. Haemonchus contortus
b. Trichostrongylus axei
c. Nematodirus spathigor
d. Dictyocaulus filaria

215. A fungus which plays a major role in the dissemination (spreading) of lung worm larvae on to the pasture is
a. *Pilobolus* spp.
b. *Arthrobotrys oligospora*
c. *Duddingtonia flagrans*
d. *Beauveria* spp.

216. Stomach worm of equine is
a. *Strongylus* spp.
b. *Habronema* spp.
c. *Anoplocephala* spp.
d. *Gastrodiscus* spp.

217. Eye worm of cattle is
a. Thelazia rhodesii b. Thelazia callipaeda
c. Setaria digitata d. Setaria cervi

218. Oesophageal tumour in dog is associated with
a. Dirofilaria immitis
b. Ancylostoma caninum
c. Spirocerca lupi
d. Dioctophyma renale

219. The intermediate host of *Spirocerca lupi* is
a. Garden lizard
b. Chicken
c. Coprophagus beetle
d. Slugs

220. Heart worm of dog is
a. Dictyocaulus filarial
b. Dirofilaria immitis
c. Stephanofilaria assamensis
d. Parafilaria spp.

221. Intermediate host of heart worm is
a. *Tabanus* spp.
b. *Phlebotomus* spp
c. Dog flea
d. Mosquito

222. "Bursati" or Summer sore is caused by
a. Habronema spp.
b. Spirocerca lupi
c. Gnathostoma spinigerum
d. Physaloptera spp.

223. "Ear sore" in cattle is caused by
a. Stephanofilaria assamensis
b. Parafilaria bovicola
c. Stephanofilaria zaheeri
d. Stephanofilaria stilesi

224. Verminous dermatitis or Cascado is caused by
a. *Stephanofilaria* spp.
b. *Onchocerca* spp.
c. *Setaria* spp.
d. *Parafilaria* spp

225. "Worm nest" containing coiled up worm in fibrous tissue capsule is seen in case of
a. Onchocerca gibsoni
b. Onchocerca gutturosa
c. Onchocerca cervicalis
d. Onchocerca reticulata

226. McLean counting system is devised for prevention of
a. Ascaris suum
b. Ancylostoma caninum
c. Toxocara vitulorum
d. Agriostomum vryburgi

227. Transport host for kidney worm of swine is
a. Musca
b. Ants
c. Earthworm
d. Snails

228. "Gilt only breeding" proposed by Stewart in 1964 is recommended for prevention of
a. Stephanurus dentatus
b. Metastrongylus
c. Bourgelatia diducta
d. Taeniasolium

229. Pittu gigar or bissi rog in ruminants is caused by
a. Fasciola
b. Amphistomes
c. Schistosoma
d. Paragonimus

230. Hourglass shaped oesophagus is seen in
a. Oxyuris equi
b. Ascaris suum
c. Ascaridia galli
d. Heterakis gallinarum

231. Cup shaped buccal capsule with cusp shaped teeth
a. Ancylostoma caninum
b. Bunostomum trigonocephalum
c. Dictyophyma renale
d. Stephanurus dentatus

232. Red lungworm of sheep and goat is
a. *Cystocaulus nigrescens*
b. *Protostrongylus rufescens*
c. *Muellerius capillaris*
d. All of the above

233. "Nurse cells" are the characteristic of
a. Trichinella spiralis
b. Sarcocystis
c. Cysticercus bovis
d. Toxoplasma

234. The stage of *Trichinella* larvae that get encapsulated in muscle cell is
a. L1 larva
b. L2 stage
c. L3 stage
d. Adult stage

235. "Bentonite flocculation" test is immunodiagnostic test for
a. *Trichinella spiralis*
b. *Toxocara canis* (VLM)
c. *Ancylostoma caninum* (CLM)
d. *Gnathosoma spinigerum*

236. Characteristic "ear" shaped (dorsal) tooth at the base of buccal capsule is seen in
a. Strongylus vulgaris
b. Strongylus equinum
c. Strongylus edentates
d. Triodontophorus

237. Kidney worm of pig is
a. Stephanurus dentatus
b. Capillaria plica
c. Dictyophyma renale
d. Dipetalonema reconditum

238. Kidney worm of dog is
a. Dictyophyma renale
b. Stephanurus dentatus
c. Eustrongylus gigas
d. All the above

239. Wahi/ Kasen/ Summer dermatitis/ Sporadic dermatitis in cattle and summer mange/ allergic dermatitis in equines is caused by
a. Parafilaria
b. Dracunculus
c. Onchocerca
d. All of the above

240. Parasite which occurs in the ligamentum nuchae of cattle and buffalo is
a. Onchocerca linealis
b. Onchocerca gutturosa
c. Onchocerca cervicalis
d. Both a and b

241. Parasite which occurs in the ligamentum nuchae of horse and mule is
a. *Onchocerca linealis*
b. *Onchocerca gutturosa*
c. *Onchocerca cervicalis*
d. Both a and b

242. Fistulous wither or poll evil in equines is caused by
a. *Onchocerca linealis*
b. *Onchocerca gutturosa*
c. *Onchocerca cervicalis*
d. Both a and b

243. Intermediate host of *Macrocanthorhynchus hirudinaceus* is
a. Dung beetle
b. Cockroaches
c. Earthworm
d. Psocid lice

244. Largest parasitic nematode in domestic animals is
a. Stephanurus dentatus
b. Capillaria plica
c. Dioctophyma renale
d. Dipetalonema reconditum

245. Hook worm of cattle is
a. Globocephalus urosubulatus
b. Bunostomum phlebotomum
c. Necator americanus
d. Bunostomum trigonocephalum

246. Hook worm of small ruminants is
a. Globocephalus urosubulatus
b. Ancylostoma ceylanicum
c. Necator americanus
d. Bunostomum trigonocephalum

247. Black scour or bankrupt worm is
a. Trichostrongylus colubriformis
b. T. vitrinus
c. Haemonchus contortus
d. Both a and b

248. "Spoon" shaped spicule with fused tips are seen in the male of
a. Cooperia curticei
b. Nematodirrus spathiger
c. Trichostrongylus axei
d. Haemonchus contortus

249. Hookworm disease in ruminants is caused by
a. Bunostomum spp.
b. Ancylostoma caninum
c. Ancylostoma duodenale
d. None of the above

250. Thorny headed worm of swine is
a. Ascaris suum
b. Macrocanthorhyncus hirudinaceus
c. Stephanurus dentatus
d. Metastrongylus elongatus

251. *Trichinella spiralis* cyst can be detected by using
a. Phase contrast microscope
b. Fuorescent microscope
c. Trichinoscope
d. Stethoscope

252. Epizootic verminous pneumonia in swine is caused by

a. Ascaris suum
b. Macrocanthorhyncus hirudinaceus
c. Stephanurus dentatus
d. Metastrongylus apri

253. The species of biting louse affecting cattle is

a. Solenopotes capillatus
b. Linognathus vituli
c. Haematopinus eurysternus
d. Damalinia bovis

254. VEE (Venezuelan Equine Encephalitis) is transmitted by

a. Fly
b. Mosquito
c. Tick
d. Lice

255. The most distinguishing characteristic of the arthropods is

a. Exoskeleton
b. Bilateral symmetry
c. Head, abdomen, thorax
d. Bilateral symmetry

256. Tongue worm found in nasal cavity of dog is

a. Ollalunus tricuspis
b. Schistosoma nasale
c. Linguatula serrata
d. Dictyocaulus arnfieldi

257. Which mite is commonly known as itch mite of dog?

a. Sarcoptes scabies
b. Cheytiella parasitivorax
c. Demodex canis
d. All the above

258. Maggots found in nasal cavity of sheep belongs to

a. Oestrus ovis
b. Rhinoestrus purpureus
c. Cephalopina titilator
d. Cobboldia elephantalis

259. Which mite is responsible for red mange of dog?

a. Demodex canis
b. Demodex injai
c. Demodex cornei
d. All the above

260. Latrine fly is known as

a. Musca domestica
b. Stmoxys calcitrans
c. Simulium dux
d. Fannia scalaris

261. Interrupted feeding habbit is seen in

a. Tabanus rubidus
b. Stomoxys calcitrans
c. Both of the above
d. None of the above

262. Gadding is related to which of the following

a. *Stomoxys* sp.
b. *Hypoderma* sp
c. *Sarcophaga* sp.
d. *Tabanus* sp.

263. Tabanid fly responsible for transmission of *loa loa* is

a. Tabanus
b. Chrysops
c. Haematopota
d. Pangonia

264. The sheep scab mite is

a. Sarcoptes scabiei
b. Psoroptes ovis
c. Both of the above
d. None of the above

265. The 'false gid' disease in sheep is caused by

a. Hypoderma lineatum
b. Oestrus ovis
c. Both of the above
d. None of the above

266. The 'spinose ear tick' infesting dogs is

a. Ornithodoros moubata
b. Otobius magnini
c. Both of the above
d. None of the above

267. Horse fly is

a. Stomoxys cancitrans
b. Tabanus rubidus
c. Simulium indicum
d. Musca autumnalis

268. Sheep nasal bot fly is

a. Oestrus ovis
b. Chrysomya bezziana
c. Sarcophaga dux
d. Gasteriphilus nasalis

269. Intestinal myiasis in which eggs usually deposited on mouth and invade sinuses and pharyngeal cavities is caused by

a. Gasterophilinae
b. Cuterebrinae
c. Hypodermatinae
d. Oestrinae

270. Arthropods differs from vertebrate in

a. Skeleteton outside the body made up of chitin
b. Nervous system on ventral aspect
c. Circulatory system on dorsal aspect
d. All the above

271. Organ of respiration in mites is

a. Cuticle
b. Malphigian tubules
c. Tracheae
d. Book lungs

272. Organ of respiration in ticks are

a. Cuticle
b. Malphigian tubules
c. Tracheae
d. Book lungs

273. Which is not a burrowing mite?

a. Sarcoptes scabei
b. Cnemidocoptes gallinae
c. Psoroptes communis
d. Cnemidocoptes mutans

274. Fur mite of guinea pig is

a. Gliricola porcelli
b. Gyropus ovalis
c. Radfordia affinis
d. Chirodiscoides caviae

275. Basic unit of compound eye is

a. Ocelli
b. Ommatidium
c. Rod cells
d. Cone cells

276. An auditory apparatus present on the pedicel of antennae is

a. Sjoberg organ
b. Hallers organ
c. Organ of Johnston
d. All of the above

277. Dapplings in the wings are seen in case of

a. Anopheles
b. Culex
c. Aedes
d. Mansonia

278. Egg rafts with cigar shaped eggs are seen in case of

a. Anopheles
b. Culex
c. Aedes
d. Mansonia

279. Larvae of mosquitoes are known as

a. Wrigglers
b. Tumblers
c. Grubs
d. Bots

280. Pupae of mosquitoes are known as

a. Wrigglers
b. Tumblers
c. Grubs
d. Bots

281. Biological control for mosquito larvae is

a. Gambusia and Thelapia fish
b. Spores of *Bacillus thuringiensis*
c. Larvae of mosquito *Trichorhynchus* spp.
d. All of the above

282. Complete metamorphosis is seen in

a. Flies and Fleas
b. Ticks and mites
c. Both a and b
d. None of the above

283. "Ox Warbles" responsible for great economic loss to hide traders is

a. Booponus intonsus
b. Hypoderma lineatum
c. Haematobia irritans
d. Phormia regina

284. "Green bottle flies" are

a. Calliphora erythrocephala
b. Phormica regina
c. Chrysomyia bezziana
d. Lucilia sericata

285. "Tumbu fly" which deposits eggs in the sleeping places of man, the larva penetrate into the skin and mature is known as

a. Sarcophaga haemorrhoidalis
b. Cordylobia anthropophaga
c. Wohlfahrtia magnifiea
d. Phormica regina

286. "Blue bottle flies" are
a. Calliphora vomitoria
b. Chrysomyia bezziana
c. Lucilia cuprina
d. Phormia regina

287. Fly larvae causes "butcher jelly"
a. Hypoderma lineatum
b. Haematobia irritans
c. Stomoxys calcitrans
d. Musca domestica

288. Leathery and wingless fly is
a. Oestrus ovis
b. Melophagus ovinus
c. Stomoxys calcitrans
d. Hypoderma bovis

289. "Potu fly" a troblesome pest occuring in himalayan region is called
a. *Culicoides pattoni*
b. *Phlebotomus argentipes*
c. *Simulium indicum*
d. *Haematopota roralis*

290. Vector for cutaneous leishmaniosis is
a. Phelebotomus papatasii
b. Phlebotomus argentipes
c. Simulium indium
d. Culicoides pattoni

291. Carrier of dengue viruses is
a. Culex pipens
b. Aedes egypti
c. Anapheles culicifacies
d. Culicoides oxystoma

292. Adult flies, does not have mandibles and maxillae and the remaining mouth parts are modified to form an apparatus adapted for sponging blood and other fluid are
a. Musca domestica
b. Aedes egypti
c. Tabanus rubidus
d. Haematopota roralis

293. "Visceral leishmaniasis" is transmitted by
a. Musca domestica
b. Phlebotomus argentipes
c. Stomoxys calcitrans
d. Glossian palpalis

294. Most common vector for *Trypanosoma evansi* is
a. Musca domestica
b. Phlebotomus argentipes
c. Glossian palpalis
d. Tabanus rubidus

295. Urogenital myiasis caused by
a. Musca domestica
b. Fannia scalaris
c. Oestrus ovis
d. Gasterophilus intestinalis

296. Queensland itch/sweet itch/ sweat itch/ summer dermatitis in equines is caused by
a. Tabanus rubidus
b. Phlebotomus sergentii
c. Aedes aegypti
d. Culicoides robertsi

297. "Wing louse" present on the underside of the large wing feathers of fowls and phesants is
a. Lipeurus caponis
b. Goniocotes gallinae
c. Menacanthus stramineus
d. Menopon gallinae

298. "Large chicken louse" of poultry is
a. Menacanthus stramineus
b. Menopon gallinae
c. Lipeurus caponis
d. Goniodes gigas

299. 'Long-nosed' cattle louse is
a. Linognathus vituli
b. Haematopinus quadripertusus
c. Solenopotes capillatus
d. Haematopinus eurysternus

300. The 'Short nosed' cattle louse is
a. Linognathus vituli
b. Haematopinus quadripertusus
c. Solenopotes capillatus
d. Haematopinus eurysternus

301. "Oriental rat flea" associated with the transmission of plague (*Yersinia pestis*) is
a. Ceratophyllus fasciatus
b. Xenopsylla cheopis
c. Pulex irritans
d. Tunga penetrans

302. "Stick tight flea" of poultry is

a. Echidnophaga gallinacea
b. Ceratophyllus garei
c. Dasypsyllus gallinulae
d. Certophyllus gallinae

303. *Simulium sp.* acts as intermediate host of

a. Babesia sp.
b. Diphylidium caninum
c. Anaplasma marginale
d. Leucocytozoon sp.

304. Dark transverse bands on dorsal aspects and rows of small spines on ventral aspect of segments are seen in the larvae of

a. Hypoderma bovis
b. Oestrus ovis
c. Gasterophilus nasalis
d. Chrysomyia bezziana

305. *Hyalomma anatolicum* transmit

a. Babesia sp.
b. Trypanaosoma evansi
c. Theileria annulata
d. All of the above

306. Tick paralysis is mainly caused by

a. Dermacentor sp. b. Ixodes sp.
c. Nosomma sp. d. Both a and b

307. Swelling of pre-scapular gland is a diagnostic feature of

a. Bovine tropical theileriosis
b. Bovine babesiosis
c. Neonatal calf diarrhoea
d. Toxoplasmosis

308. Bovine babesiosis is commonly transmitted by

a. Rhipicephalus microplus
b. Haemaphysalis bispinosa
c. Hyalomma anatolicum
d. Ixodes ricinus

309. Ingestion of infected ticks by dog results in the infection of

a. Histomonas meleagridis
b. Hepatozoon canis
c. Trypanosoma evansi
d. Neospora caninum

310. Equine babesiosis is caused by

a. Babesia foliata b. Theileria equi
c. Babesia bovis d. Babesia rossi

311. "Koch's blue bodies" found in theileriosis are

a. Macroschizonts b. Trophozoits
c. Sporozoits d. Microschizonts

312. Modified ZN acid fast staining is used to detect

a. Cryptosporidium oocyst
b. Eimeria sp. Oocyst
c. Isospora sp. Oocyst
d. Cystisospora spp.

313. Bovine tropical theileriosis is commonly transmitted by

a. Rhipicephalus microplus
b. Haemaphysalis bispinosa
c. Hyalomma anatolicum
d. Ixodes ricinus

314. Stage of *Hepatozoon canis* found in dog blood is

a. Trophozoite
b. Piroplasm
c. Schizont
d. Gamont

315. Pin-point to pin head sized white cyst scattered throughout the small intestine of goat is due to

a. Giardia
b. Balantidium
c. Coccidia
d. None of the above

316. Corneal opacity in dogs may be due to

a. Babesia canis
b. Trypanosoma evansi
c. Leishmania donovani
d. All of the above

317. Canker in chicken is caused by

a. Trichomonas gallinarum
b. Trichomonas gallinae
c. Haemoproteus columbae
d. Leucocytozoon smithi

318. Chagas disease is caused by
a. Trypanosoma evansi
b. Trypanosoma theileri
c. Trypanosoma cruzi
d. Trypanosoma vivax

319. Sucking disc is a characteristic feature of:
a. Entamoeba coli
b. Giardia lamblia
c. Balantidium coli
d. Trichomonas gallinae

320. Most pathogenic species of coccidia in pigs is
a. Eimeria debliecki
b. Eimeria porci
c. Isospora suis
d. All of the above

321. Equine protozoal myeloencephalitis is caused by:
a. Sarcocystis tenella
b. Sarcocystis neurona
c. Sarcocystis cruzi
d. Sarcocystis moulei

322. Buparvaquone is drug of choice for
a. Trypanosomosis
b. Babesiosis
c. Theileriosis
d. All of the above

323. Diminazene aceturate is effective against
a. Trypanosomosis
b. Babesiosis
c. Theileriosis
d. All of the above

324. Babesiosis in sheep and goats is caused by
a. Babesia motasi
b. Babesia ovis
c. Babesia taylori
d. All of the above

325. Red water fever or Texas fever in buffalo is caused by
a. Babesia bigemina
b. Babesia bovis
c. Babesia motasi
d. Babesia foliata

326. Microhaematocrit centrifuge method is used for the concentration and diagnosis of
a. Trypanosome evansi
b. Theileria annulata
c. Babesia bovis
d. Hepatozoon canis

327. Leishman and Wright stains are
a. Aqueous based Romanowsky stain
b. Alcoholic based Romanowsky stain
c. Acetone based Romanowsky stain
d. Ether based Romanowsky stain

328. Size of *Theileria annulata* piroplasm form is approximately
a. 0.5-1.5 micron
b. 1.5-3.0 micron
c. 2.5-3.5 micron
d. None of the above

329. Multiple adenomas in bile duct of rabbit is caused by
a. Eimeria tenella
b. Eimeria maxima
c. Eimeria stiedae
d. Eimeria necatrix

330. Leishman Donovan (LD) bodies are seen in
a. Trypanosomiasis
b. Leishmaniasis
c. Theileriasis
d. Babesiosis

331. Leishmaniasis is transmitted by
a. Triatoma spp. (Kissing bug)
b. Tabanus spp.
c. Phlebotomus Spp. (Sand flies)
d. Glossina spp. (Tse-tse flies)

332. Chagas disease is transmitted by
a. Triatoma spp. (Kissing bug)
b. Tabanus spp.
c. Phlebotomus Spp. (Sand flies)
d. Glossina spp. (Tse-tse flies)

333. Cats act as definitive host and intermediate host for
a. Trichomoniasis
b. Toxoplasmosis
c. Besnoitiosis
d. Sarcocytosis

334. East coast fever is caused by

a. Theileria annulata
b. Theileria parva
c. Eimeria acervulina
d. Isospora canis

335. Dum-dum fever is also known as

a. Bartonellosis
b. Ehrlichiosis
c. Visceral Leishmaniasis
d. Cutaneous Leishmaniasis

336. Tropical bovine theileriosis is caused by

a. *Theleria annulata*
b. *Theleria parva*
c. *Babesia bovis*
d. *Anaplasma centrale*

337. Gall sickness in cattle calves occur due to

a. Babesia bigemina
b. Anaplasma marginale
c. Theileria annulata
d. Babesia bovis

338. January-disease in cattle is caused by

a. Theleria parva
b. Theileria annulata
c. Theileria orientalis
d. Theileria hirci

339. "Kala azar" and PKDL is caused by

a. L. donovani
b. L. tropica
c. L. mexicana
d. L. braziliensis

340. "Initial bodies" are seen in

a. Theileriosis
b. Leptospirosis
c. Anaplasmosis
d. Pasturellosis

341. Haemoglobinuria is seen in

a. Theileriosis
b. Leptospirosis
c. Babesiosis
d. Both b and c

342. Sabin Feldman dye test is used for diagnosis of

a. Toxoplasmosis
b. Theileriosis
c. Babesiosis
d. Sarcocystosis

343. Renal coccidiosis in mice is caused by

a. Syphacia obvelata
b. Apiscularis tetraptera
c. Klosiella muris
d. None of the above

344. Corneal opacity in dogs is caused by

a. *Bartonella bacilliformis*
b. *Trypanosoma evansi*
c. *Cowdria ruminatum*
d. *Ehrlichia canis*

345. Xenodiagnosis is used in

a. Chagas disease
b. Surra
c. Dourine
d. Kala Azar

346. Heavy mortality is seen in

a. E. tenella
b. E. praecox
c. E. mitis
d. All of above

347. Most coccidial infections are

a. Subclinical
b. Clinical
c. Lethal
d. None of the above

348. Saucer shaped lesions on liver are pathognomonic for

a. Salmonellosis
b. Histomoniasis
c. Inclusion body hepaptitis
d. Gout

349. Blackhead disease in turkeys is caused by

a. Ascaridia galli
b. *Heterakis gallinarum*
c. *Histomonas meleagridis*
d. *Syngamus trachea*

350. *Histomonas meleagridis* is transmitted through

a. House flies
b. Egg of *Heterakis gallinarum*
c. Egg of *Eimeria spp.*
d. Ants and silk worms

351. Circular depressed areas of necrosis up to 1 cm in diameter surrounded by a raised ring is seen in

a. Salmonellosis
b. Histomoniasis
c. Inclusion body hepaptitis
d. Gout

352. Sulphur-yellow droppings are seen in

a. Fowl cholera
b. Histomoniasis
c. Syngamiasis
d. Pullorum disease

353. "Yellow buttons" in birds is seen in infection with

a. Trichomonas gallinae
b. Histomonas meleagridis
c. Eimeria acervulina
d. Leucocytozoon smithi

354. Tibarsa or Gufar in camels is caused by

a. *Trypanosoma evansi*
b. *Trypanosoma theileri*
c. *Trypanosoma cruzi*
d. *Trypanosoma equiperdum*

355. Balloning of intestine is seen in Coccidiosis caused by

a. *E. necatrix*
b. *E. tenella*
c. *E. maxima*
d. *E. acervulina*

356. Asexual reproduction of coccidian parasite leads to formation of

a. Gametocytes
b. Schizont
c. Trophozoites
d. Sporozoits

357. Sexual reproduction of coccidian parasite leads to formation of

a. Gametocytes
b. Schizont
c. Trophozoites
d. Sporozoits

358. Surra is caused by

a. *Trypanosoma evansi*
b. *Trypanosoma theileri*
c. *Trypanosoma cruzi*
d. *Trypanosoma equiperdum*

359. Most of the birds survive to the coccidiosis are due to

a. Preimmunity
b. Postimmunity
c. Vaccine
d. None of the above

360. Intestinal coccidiosis is caused by

a. *E. tenella*
b. *E. brunetti*
c. *E. necatrix*
d. *E. acervulina*

361. Flask shaped ulcers is characteristic feature observed in

a. Giardia lamblia
b. Entamoeba histolytica
c. Cryptosporidium spp.
d. Eimeria bovis

362. Thrombocytopenia in dogs is caused by

a. Hepatozoon canis
b. Babesia canis
c. Ehrlichia canis
d. Anaplasma marginale

363. "Koch blue bodies" in bovine tropical theileriosis are seen in

a. Lymphocytes
b. Monocytes
c. Plasma cells
d. T cells

364. "Dollar spots" of silver colour in flank region of horses are observed in infection of

a. *Trypanosoma evansi*
b. *Trypanosoma theileri*
c. *Trypanosoma cruzi*
d. *Trypanosoma equiperdum*

365. Sabin-feldman dye test is used for diagnosis of

a. Toxoplasmosis
b. Theileriosis
c. Babesiosis
d. Sarcocystosis

366. Circling movements in buffaloes are often caused by

a. *Theileria annulata*
b. *Trypanosoma evansi*
c. *Sarcocystis neurona*
d. *Giardia lamblia*

367. "Ring worm like lesions" in abomasum of sheep are caused by

a. Trichostrongylus axei
b. Ostertagia ostertagi
c. Cooperia oncophora
d. Nematodirus battus

368. Dourine or Equine syphilis is caused by
a. *Trypanosoma evansi*
b. *Trypanosoma theileri*
c. *Trypanosoma cruzi*
d. *Trypanosoma equiperdum*

369. Giemsa and JSB stain are example of
a. Aqueous based Romanowsky stain
b. Alcoholic based Romanowsky stain
c. Acetone based Romanowsky stain
d. Ether based Romanowsky stain

370. Protozoan parasite having both flagella and pseudopodia in their life cycle is
a. Trypanosoma evansi
b. Leishmania donovani
c. Histomonas meleagridis
d. Entamoeba histolytica

371. Signet ring in human erythrocytes is associated with
a. Theileria
b. Plasmodium
c. Babesia
d. Anaplsma

372. *Cryptosporidium* species which leads to destruction of destruction of microvilli of peptic glands and elevated pepsinogen level is
a. C. parvum
b. C. andersoni
c. C. xiaoi
d. C. bovis

373. Protozoan infection in which blood will not mixed with the faeces
a. Giardia lamblia
b. Entamoeba histolytica
c. Eimeria bovis
d. Balantidium coli

374. Ladder lesions in duodenum is associated with
a. Eimeria acervulina b. Eimeria tenalla
c. Eimeria necatrix d. Eimeria mivati

375. Lipid metabolism is affected in case of
a. Giardiosis b. Amoebiasis
c. Coccidiosis d. Balantidial dysentery

376. Variable surface protein as a strategy of immune evasion is seen in case of
a. Giardia lamblia
b. Trypanosoma evansi
c. Cryptosporidum muris
d. Toxoplasma gondii

377. Equine protozoan myeloencephalitis is caused by
a. Neospora caninum
b. Toxoplasma gondii
c. Sarcocystis neurona
d. Entamoeba histolytica

378. "Pseudocysts" in cardiac muscles are seen in
a. Dirofilaria infection
b. Sarcocystis infection
c. Echinococcus infection
d. Toxoplasma infection

379. The most virulent strain of african trypanosomiasis in man is
a. *T. cruzi*
b. *T. rhodesiense*
c. *T. equiperdum*
d. *T. gambiense*

380. In *Leishmania donovani*, the stage seen within the vector is
a. Amastigote
b. Promastigote
c. Epimastigote
d. Trypomastigote

381. Mode of transmission for *Theileria annulata* through *Hyalomma* ticks is
a. Transtadial b. Transovarian
c. Prenatal d. Transplacental

382. Stercoraria is the term used for
a. Anterior station developement
b. Posterior station development
c. Pre erythrocytic schizogony
d. Post erythrocytic schizogony

383. Method of sexual reproduction is
a. Binary fission b. Syngamy
c. Budding d. Schizogony

384. Following are the organelle for nutrition in protozoa except

a. Psuedopodia
b. Food vacuole
c. Contractile vacuole
d. Flagella

385. Antrycide prosalt is the drug of choice for

a. Babesia equi
b. Trypanosoma evansi
c. Babesia bigemina
d. Giardia lamblia

386. Toxovac is the vaccine for the control of Toxoplasmosis in

a. Cattle
b. Sheep
c. Dog
d. Poultry

387. Infection in coccidiosis is by the ingestion of

a. Merozoite
b. Sporozoite
c. Sporulated oocysts
d. Unsporulated oocyst

388. "Modified Zeihl Neelson's staining" method is used for diagnosis of

a. Neosporosis
b. Sarcocystis
c. Cryptosporidiosis
d. Toxoplasmosis

389. Stain used for intestinal protozoan parasites is

a. Iodine solution
b. Giemsa
c. 33% $ZnSO_4$
d. Caramine

390. The vaccine "Rakshavac –T" for prevention of tropical bovine theileriosis is prepared form

a. Sporozoite
b. Piroplasms infected RBC
c. Schizont infected lymphocytes
d. Sporoblast

391. Small free flagellum and short undulating membrane is seen in

a. Promastigote
b. Epimastigote
c. Trypomastigote
d. Amastigote

392. *Eimeria zuernii* in bovine causes

a. Red dysentery
b. Red water disease
c. Heart water disease
d. Rectal coccidiosis

393. Rainey's corpsules in muscles are associated with

a. Toxoplasma sp
b. Sarcocystis sp
c. Coccidia sp
d. Isospora sp

394. Subkingdom protozoa are classified under the kingdom

a. Monera
b. Protista
c. Animalia
d. Plantae

395. Organelle of locomotion in *Balatidium coli* is

a. Flagella
b. Psuedopodia
c. Cilia
d. Fimbriae

396. *Trypanosoma equiperdum* in equine is transmitted by

a. Biting flies
b. Ticks
c. Coitus
d. None of the above

397. Kinetoplast in *Leishmania* sp. and *Tryanosoma evansi* is the flattened part of

a. Nucleus
b. Blepharoplast
c. Mitochondria
d. Golgi body

398. "Maltese cross" appearance in equine erythrocytes is associated with

a. Babesia bigemina
b. Theileria equi
c. Babesia bovis
d. Babesia caballi

399. The infective stage of *Toxoplasma gondii* is

a. Tachyzoites
b. Bradyzoites
c. Sporulated oocysts
d. All of the above

400. Punched out necrotic ulcers in the abomasum of cattle is characteristic lesion of

a. Theileriosis
b. Tritrichomonosis
c. Babesiosis
d. Surra

401. Ingestion of infected tick is the mode of infection of
a. Babesia canis
b. Hepatozoon canis
c. Ehrlichia canis
d. Cryptosporidium sp.

402. "Traveller's diarrhoea" in man is caused by
a. Cryptosporidium sp.
b. Trichinella spiralis
c. Giardia lambia
d. Trichuris sp.

403. Father of protozoology is
a. Fransesco Redi
b. Theobald Smith
c. Tyzzer
d. Antony Van Leeuwenhoek

404. "Halter shaped gamonts" in the poultry erythrocytes are seen in the infection of
a. Leucocytozoon simondi
b. Plasmodium gallinaceum
c. Haemoproteus columbae
d. Anaplasma marginale

405. Infectious catarrhal enteritis in turkey poults is caused by
a. Hexamita meleagridis
b. Histomonas meleagridis
c. Sarcocystis neurona
d. Giardia lamblia

406. *Entamoeba* species with single nucleus
a. Entamoeba histolytica
b. Entamoeba coli
c. Entamoeba bovis
d. None of the above

407. Rainey's corpuscles are
a. Bradyzoites of *Sarcocystis sp.*
b. Tachyzoites of *Sarcocystis sp.*
c. Bradyzoites of *Toxoplasma sp.*
d. Tachyzoites of *Toxoplasma sp.*

408. Anaplasma infection is manifested in
a. Erythrocytes b. Neutrophils
c. Lymphocytes d. All of the above

409. Latent infections of Trypanosomiosis in bovines is diagnosed by
a. Mercuric chloridre test
b. Formol gel test
c. Thymol turbidity test
d. Stilbamidine test

410. Theileriosis in cattle is transmitted by
a. Hyalomma anatolicum anatolicum
b. Boophilus annulatus
c. Rhipicephalus Spp.
d. Both a and c

411. Mal de Caderas is caused by
a. *Trypanosoma evansi*
b. *Trypanosoma theileri*
c. *Trypanosoma equinum*
d. *Trypanosoma equiperdum*

412. Inverted flask shaped ulcers in colon are observed in
a. *Giardia lamblia*
b. *Cryptosporidium* sp.
c. *Entamoeba histolytica*
d. *Eimeria bovis*

413. Equine protozoan myeloencephalitis (EPM) in horses is caused by
a. Neospora hugesii
b. *Sarcocystis neurona*
c. *Toxoplasma gondii*
d. Both a and b

414. Ziemann's stippling is observed in
a. Plasmodium malariae
b. Plasmodium ovale
c. Plasmodium gallinaceum
d. Plasmodium simium

415. Transovarian transmission in ixodid ticks is seen in
a. Babesiosis b. Theileriosis
c. Trypanosomosis d. Both a and b

416. Sulphur yellow colored droppings in poultry sheds are observed in
a. Histomonosis b. Hexamitosis
c. Giardiosis d. Balantidiosis

417.Sabin Feldman dye test is used to detect

a. IgA b. IgM
c. IgE d. IgG

418.Cutaneous and muco-cutaneous Leishmaniasis is diagnosed by

a. Tuberculin test b. Montenegro test
c. Both d. None

419.Leishmaniasis is treated by

a. Antimonials b. Suramin
c. Antrycide prosalt d. All of the above

420.Primary reservoir host for *T cruzi* is

a. Armadillo & Opossum
b. Bats
c. Cattle
d. None of the above

421.Main source of balantidiosis is

a. Swine b. Rodents
c. Dog d. Birds

422.Stage of trypanosome in vector is

a. Epimastigote b. Amastigote
c. Promastigote d. Trypomastigote

423."Espundia" is caused by

a. L. donovani b. L. tropica
c. L. mexicana d. L. braziliensis

424.Pathological finding in case of Leishmaniasis is/are

a. Hepatomegaly b. Spleenomegaly
c. Both a and b d. None of the above

425.Infective stage of *Leishmania* for man is

a. Amastigote b. Promastigote
c. Epimastigote d. Trypomastigote

Answer Sheet

1. b	2. b	3. b	4. d	5. a	6. a	7. a	8. a	9. b	10. c
11. b	12. b	13. c	14. b	15. b	16. c	17. c	18. c	19. a	20. d
21. c	22. a	23. d	24. a	25. d	26. c	27. c	28. d	29. a	30. a
31. c	32. c	33. d	34. b	35. a	36. c	37. b	38. b	39. b	40. c
41. d	42. c	43. b	44. d	45. a	46. a	47. c	48. a	49. d	50. d
51. d	52. b	53. a	54. a	55. c	56. a	57. c	58. a	59. b	60. a
61. c	62. a	63. b	64. a	65. b	66. a	67. b	68. a	69. c	70. c
71. a	72. a	73. b	74. c	75. a	76. c	77. c	78. b	79. a	80. a
81. c	82. a	83. a	84. b	85. b	86. b	87. c	88. c	89. c	90. b
91. c	92. b	93. d	94. d	95. d	96. b	97. c	98. d	99. c	100. d
101. a	102. c	103. a	104. a	105. b	106. a	107. b	108. c	109. b	110. b
111. b	112. c	113. a	114. c	115. a	116. b	117. b	118. b	119. b	120. b
121. a	122. b	123. d	124. d	125. d	126. b	127. b	128. a	129. a	130. c
131. a	132. b	133. b	134. a	135. c	136. c	137. c	138. b	139. c	140. b
141. b	142. d	143. a	144. b	145. c	146. a	147. a	148. b	149. d	150. a
151. a	152. b	153. a	154. d	155. b	156. a	157. b	158. a	159. d	160. a
161. a	162. d	163. a	164. c	165. c	166. b	167. c	168. b	169. c	170. b
171. c	172. a	173. b	174. c	175. c	176. c	177. b	178. b	179. a	180. a
181. d	182. a	183. a	184. b	185. c	186. a	187. c	188. a	189. d	190. a
191. a	192. a	193. a	194. c	195. a	196. a	197. a	198. c	199. c	200. b
201. d	202. a	203. d	204. a	205. d	206. b	207. d	208. a	209. a	210. a
211. c	212. a	213. a	214. a	215. a	216. b	217. a	218. c	219. c	220. b
221. d	222. a	223. c	224. a	225. a	226. a	227. c	228. a	229. b	230. a
231. d	232. b	233. a	234. a	235. a	236. a	237. a	238. a	239. c	240. b
241. c	242. c	243. a	244. c	245. b	246. d	247. d	248. b	249. a	250. d
251. c	252. d	253. d	254. b	255. a	256. c	257. a	258. a	259. d	260. d
261. a	262. b	263. b	264. b	265. b	266. b	267. b	268. a	269. a	270. d
271. a	272. c	273. c	274. d	275. b	276. c	277. a	278. b	279. a	280. b
281. d	282. a	283. b	284. d	285. b	286. a	287. a	288. b	289. c	290. a
291. b	292. a	293. b	294. d	295. b	296. d	297. a	298. d	299. a	300. d
301. b	302. a	303. d	304. b	305. c	306. d	307. a	308. a	309. b	310. b
311. a	312. a	313. c	314. d	315. c	316. b	317. b	318. c	319. b	320. a

321. b	322. c	323. b	324. d	325. a	326. a	327. b	328. a	329. c	330. b
331. c	332. a	333. b	334. b	335. c	336. a	337. b	338. a	339. a	340. c
341. d	342. a	343. c	344. b	345. a	346. a	347. a	348. b	349. c	350. b
351. b	352. b	353. a	354. a	355. a	356. c	357. a	358. a	359. a	360. c
361. b	362. c	363. a	364. d	365. a	366. b	367. a	368. d	369. a	370. c
371. b	372. b	373. a	374. a	375. a	376. a	377. c	378. d	379. a	380. b
381. a	382. b	383. b	384. d	385. b	386. b	387. c	388. c	389. a	390. c
391. b	392. a	393. b	394. b	395. c	396. c	397. c	398. b	399. d	400. a
401. b	402. c	403. b	404. c	405. a	406. c	407. a	408. a	409. d	410. d
411. c	412. c	413. d	414. a	415. a	416. a	417. b	418. b	419. a	420. a
421. a	422. c	423. d	424. c	425. b					

Unit – 4

Veterinary Microbiology

Genome of Viruses

<table>
<tr><th colspan="4">RNA</th></tr>
<tr><th colspan="2">Single stranded RNA (Enveloped)</th><th>Single stranded RNA (Non-enveloped)</th><th rowspan="2">Double stranded RNA</th></tr>
<tr><th>Positive-sense ss RNA</th><th>Negative-sense ss RNA</th><th>Positive-sense ss RNA</th></tr>
<tr><td>Coronaviridae</td><td>Paramyxoviridae</td><td>Picornaviridae</td><td>Reoviridae</td></tr>
<tr><td>Retroviridae</td><td>Orthomyxoviridae</td><td rowspan="7">Calicivridae</td><td rowspan="7">Birnaviridae</td></tr>
<tr><td>Togaviridae</td><td>Rhabdoviridae</td></tr>
<tr><td>Astroviridae</td><td>Bunyaviridae</td></tr>
<tr><td>Arteriviridae</td><td>Bornaviridae</td></tr>
<tr><td>Flaviviridae</td><td>Arenaviridae</td></tr>
<tr><td>Nodaviridae</td><td>Filoviridae</td></tr>
<tr><td>* These viruses are Icosahedral in symmetry (Except: Coronaviridae which are helical in symmetry)</td><td>* These viruses are helical in symmetry (Except: Bornaviridae which are Icosahedral in symmetry)</td><td>* These viruses are Icosahedral in symmetry</td><td>* These viruses are Icosahedral in symmetry</td></tr>
<tr><th colspan="4">DNA</th></tr>
<tr><th colspan="2">Single stranded DNA (Non-enveloped)</th><th>Double stranded DNA (Enveloped)</th><th>Double stranded DNA (Non-enveloped)</th></tr>
<tr><td colspan="2">Circoviridae</td><td>Poxviridae</td><td>Polyomaviridae</td></tr>
</table>

Parvoviridae	Herpesviridae	Papillomaviridae
		Adenoviridae
		Asfarviridae
		Iridoviridae
		Hepadnaviridae
* These viruses are Icosahedral in symmetry (Except: Poxviridae and Asfarviridae which are complex in symmetry)		

Animal and Avian Viral Diseases

Viral			
Family	**Genus**	**Disease**	**Synonym**
Paramyxoviridae	Morbillivirus	Rinderpest	Cattle plague Bovine typhus
		PPR	Goat plague Pseudo Rinderpest Goat catarrhal fever
		Canine Distemper	Hard pad disease Carre's disease Old dog encephalitis
	Avulavirus	Ranikhet Disease	New castle disease Avian distemper Avian pest Black eye Doyle's disease
	Metapneumovirus	Turkey Rhinotracheitis	
Orthomyxoviridae	Influenzavirus A	Avian influenza	Bird flu Fowl plague
		Equine influenza	Equine distemper Pink eye Stable pneumonia
		Swine influenza	H1N1 flu
Poxviridae	Orthopoxvirus	Vaccinia virus	
		Cowpox	
		Variola	Smallpox
		Ectromelia	Mousepox
		Rabbitpox	
		Monkeypox	

	Parapoxvirus	Pseudocowpox	Milker's Nodule Paravaccinia
		Orf	Contagious ecthyma Contagious pustular dermatitis Scabby mouth Sore muzzle
		Bovine papular stomatitis	
	Capripoxvirus	Lumpy skin disease	Pseudo urticaria
		Sheep pox	
		Goat pox	
	Leporipoxvirus	Myxoma virus	Myxomatosis (Rabbit)
Herpesviridae	Simplexvirus	Bovine ulcerative mammillitis (BHV-2)	
		Pseudolumpy skin disease (BHV-2)	
	Vericellovirus	Infectious bovine rhinotracheitis (BHV-1)	Infectious pustular vulvovaginitis Red nose Vesicular venereal disease Vesicularvaginitis Coital vesicular vaginitis
		Pseudorabies (PHV-1)	Mad itch Aujesky's disease Infectious bulbarparalysis
		Equine viral abortion (EHV-1)	
		Equine coital exanthema (EHV-3)	
		Equine rhinopneumonitis (EHV-4)	
	Mardivirus (Gallid HV-2)	Marek's disease	Fowl paralysis Range paralysis Grey eye Pearl eye

	Iltovirus (Gallid HV-1)	Infectious laryngotracheitis	Avian diphtheria
	Rhadinovirus	Bovine malignant catarrh (Alcelaphine HV-1)	Bovine malignant catarrhal fever Gangrenous coryza
Rhabdoviridae	Lyssa virus	Rabies	Mad dog disease Lyssa Rage Hydrophobia (Human)
	Ephemerovirus	Bovine Ephemeral fever	Three - Day sickness Dragon boat disease Bovine epizootic fever
	Vesiculovirus	Vesicular stomatitis	Sore mouth
Flaviviridae	Pestivirus	Classical swine fever	Hog cholera Swine plague
		Bovine viral diarrhea	
		Mucosal disease	
		Border disease of sheep	Hairy shaker's disease Hairy-shaker lamb Fuzzy lamb Hypomyelinosiscongenita
	Flavivirus	Louping ill	Ovine Encephalomyelitis
		West nile fever	
		Japanese encephalitis	
		Yellow fever	
		Dengue	Breakbone fever
Picornaviridae	Aphthovirus	FMD	Aphthous fever
	Enterovirus	Swine vesicular disease	
		SMEDI	
		Porcine encephalomyelitis	Teschen Talfan
		Avian nephritis	Runting syndrome Baby chick nephropathy
		Avian encephalomyelitis	Epidemic tremor New England Disease
Togoviridae	Alphavirus (Arboviruses)	Equine Encephalomyelitis (Eastern, Western and Venezuelan)	Blind staggers

Coronaviridae	Coronavirus	Transmissible gastroenteritis(TGE)	
		Feline infectious peritonitis	
		Infectious Bronchitis	Gasping disease
		Turkey bluecomb disease	
		Winter dysentery	Bovine coronavirus enteritis
Reoviridae	Orbivirus	Blue tongue	Muzzle disease Pseudo FMD Sore mouth Sore muzzle
		African horse Sickness	Horse plague
	Rotavirus	Neonatal viral diarrhoea	
Retroviridae	Lentivirus	Maedi	Progressive pneumonia
		Visna	Wasting
		Equine infectious anemia (EIA)	Swamp fever Equine AIDS
	Alpharetrovirus (Oncovirus)	Avian leukosis	Big liver disease Avian leucosis complex
		Avian sarcoma	
	Betaretrovirus (Oncovirus)	Jaagsiekte	Ovine pulmonary adenomatosis
	Gammaretrovirus (Oncovirus)	Feline leukemia	
		Avian Reticuloendotheliosis	
Bunyaviridae (Arboviruses)	Phlebovirus	Rift valley fever	
	Nairovirus	Nairobi sheep disease	
		Crimean Congo Haemorrhagic fever	
	Bunyavirus	Akabane disease	
Circoviridae	Circovirus	Chicken infectious anaemia	Blue wing disease
		Psittacine beak and feather disease	

Parvoviridae	Parvovirus	Canine parvovirus disease	
		Feline panleukopaenia	Feline distemper Fading kittensyndrome
Adenoviridae	Mastadenovirus	Infectious canine hepatitis	Rubarth's disease Blue eye
	Aviadenovirus	Inclusion body hepatitis	
	Siadenovirus	Marble spleen disease	
	Atadenovirus	Egg drop syndrome	EDS-76
	Unclassified	Hydropericardium-Hepatitis Syndrome (HHS)	Angara disease Leechi disease
Birnaviridae	Birnavirus	Infectious bursal disease	Gumboro disease Infectious bursitis

Bacterial diseases

Genus	Species	Main host	Disease
Streptococcus (Gram Positive)	*S. pyogenes*	Humans	Scarlet fever
	S. equi subsp. equi	Horse	Strangles
	S. porcinus	Pigs	Jowl abscesses, lymphadenitis
	S. pneumoniae	Guinea pigs, rats, primates	Pneumonia
	S. dysgalactiae	Cattle	Acute mastitis
Staphylococcus (Gram Positive)	*Staph. aureus*	Horse	Botryomycosis
	Staph. hyicus	Pig	Exudative epidermitis/ Greasy pig disease
	Staph. spp.	Poultry	Bumble foot
Bacillus (Gram Positive)	*Bacillus anthracis*	Humans	Wool sorter's disease, hide porter's disease, Malignant Pustule
		Animals	Anthrax

Clostridium (Gram Positive)	*Clostridium chauvoei*	Cattle	Black quarter/Black leg
	Cl. septicum	Cattle	Malignant edema
		Sheep	Braxy/ Bradshot
		Chicken	Necrotic dermatitis
	Cl. novyi type A	Cattle and Sheep	Gas gangrene
	Cl. novyi type B	Sheep	Black disease (necrotic hepatitis)
	Cl. haemolyticum (*Cl. novyi* type D)	Cattle, (Sheep)	Bacilliary haemoglobinuria/Red water disease
	Cl. colinum	Birds	Quail disease/ Ulcerative enteritis
	Cl. piliforme	Foals, laboratory animals	Tyzzer's disease
	Cl. perfringens type A	Lambs	Yellow lamb disease
	Cl. perfringens type B	Lambs	Lamb dysentery
	Cl. perfringens type C	Pigs/Lambs/ Poultry	Haemorrhagic enterotoxaemia/ Struck in sheep/ Necrotic enteritis in poultry/ Pig Bel in humans
	Cl. perfringens type D	Sheep	Overeating disease/ Pulpy kidney disease
	Cl. perfringens type E	Calves and lambs	Enterotoxaemia
	Cl. tetani	Horses, cattle, sheep, goat	Tetanus
	Cl. botulinum	Cattle	Botulism, Lamsiekte, loin disease, Forage poisoning and contagious bulbar paralysis
		Horses	Spinal typhus / Shaker foal syndrome
		Poultry	Limberneck, alkali poisoning and western duck sickness
Listeria (Gram positive)	*L. monocyotgenes*	Sheep, goats, cattle	Circling disease/ Silage disease

Erysipelothrix (Gram positive)	*E. rhusiopathiae*	Pigs	Swine erysipelas/ Diamond skin disease
Mycobacterium	*Mycobacterium tuberculosis*	Animals	Tuberculosis
	Mycobacterium avium subsp paratuberculosis	Cattle	Paratuberculosis (Johne's disease)/ Crohn's disease in humans
Nocardia	*Nocardia farcinica*	Cattle	Bovine farcy
Dermatophilus	*Dermatophilus congolensis*	Sheep	Strawberry foot rot
Corynebacterium (Gram positive)	*C. pseudotuberculosis* (*Corynebacterium ovis* or Preisz Nocard Bacillus)	Sheep	Caseous lymphadenitis
		Horse, cattle	Ulcerative lymphangitis
	Corynebacterium renale	Cattle	Pyelonephritis and cystitis
		Sheep	Pizzle rot
Actinomyces	Actinomyces bovis (Ray fungi)	Cattle	Lumpy jaw
Actinobacillus	*Actinobacillus lignieresii*	Cattle	Wooden tongue/ Timber
Escherichia	*E. coli*	Cattle	White scours/ navel ill/ Joint ill/ Mastitis
		Pig	Edema disease
		Poultry	Colibacillosis/ Hjarre disease/ Coligranuloma/ Omphalitis/ Mushy chick disease
Salmonella	*S. pullorum*	Poultry	Pullorum disease/ White bacillary diarrhoea
	S. gallinarum	Poultry	Fowl typhoid
	S. typhi	Humans	Typhoid fever
	S. paratyphi	Humans	Paratyphoid fever
Pasteurella	*P. multocida* type A	Poultry	Fowl cholera
	P. multocida type B	Cattle	Haemorrhagic septicaemia / Barbone

	P. multocida type D	Pigs	Atrophic rhinits
Haemophilus	*H. parasuis*	Pigs	Glasser disease
	H. paragallinarum	Poultry	Infectious coryza/ Swollen head disease
Burkholderia	*B. mallei*	Horse	Glanders/ Farcy
	B. pseudomallei (Whitemore's bacillus)	Horse	Melioidosis/ Pseudoglanders
Brucella	*B. abortus*	Cattle	Bang's disease/ Abortion storm
		Horse	Poll evil/ Fistulous withers
		Humans	Undulant fever
	B. melitensis	Sheep/ Goat	Abortion
		Humans	Malta fever
	B. suis	Pig	Abortion
		Humans	Undulant fever
	B. ovis (Non-zoonotic)	Sheep	Abortion
Campylobacter	*C. fetus subsp. venerealis*	Cattle	Epizootic bovine abortion
	C. jejuni	Cattle	Winter dysentery/ Mastitis
Mycoplasma	*M. gallisepticum*	Poultry	Chronic Respiratory Disease (CRD)
	M. synoviae	Turkey	Infectious sinovitis
	M. mycoides subsp mycoides	Cattle	Contagious Bovine Pleuro Pneumonia (CBPP)
	M. mycoides subsp Capri	Goat	Contagious Caprine Pleuro Pneumonia (CCPP)
	M. agalactiae	Sheep	Contagious agalactia

Diagnostic Test

Bacteria (Disease)	Diagnostic test / Identification / Isolation
Bacillus anthracis	Ascolis test Mcfadyean reaction String of pearls test

Tuberculosis	Stormont test Mantoux test
Paratuberculosis/Johne's disease	Spoligo test Johnin test
E. coli	Eijkman test
Salmonella	Ames test
Brucella	Card test Rivanol/Mercaptoethanol test Rose Bengal test Abortus bang ring test Coomb's test
Vibriosis	Kanagawa test
Porcine stress syndrome	Halothane test
Lymphoid leucosis	COFAL test RIF test (Resistance Inducing Factor)
Clostridium perfringens	Nagler reaction Stormy clot reaction Stormy fermentation
Rickettsia	Weil-Felix reaction
Klebsiella	Quelling reaction Swelling reaction

Culture Media

Organism	Selective media
Streptococcus	Edwards media
Staphylococcus	Mannitol salt agar
Listeria	Oxford media, PALCAM media
Bacillus	(PLET) consisting of polymyxin, lysozyme, EDTA and thallous acetate added to heart infusion agar
Clostridium	Robertson's cooked meat broth
Erysipelothrix	Triple sugar iron agar
Mycobacterium	Lowenstein Jensen medium/ Stone Brinks medium (Malachite green dye is used)/ Herrold's egg yolk medium
Nocardia	Sabouraud dextrose agar
E. coli	Eosin methylene blue (EMB) agar / Mac Conkey

Salmonella	Tetrathionate broth, selenite broth and rappaport vasiliadis medium
Pasteurella	Brain heart Infusion agar and Ox/Sheep blood agar
Haemophilus	Chocolate agar
Brucellla	Albimi medium and Columbia agar
Leptospira	Korthof's modified medium, Stuart's liquid medium, Fletcher's semi solid medium, EMJH, Ellis medium

Type of Inclusion Body

Type of inclusion body	Viruses which produce
Intracytoplasmic acidophilic	Vaccinia, Fowl pox, Cow pox, Paramyxoviruses, Reoviruses and rabies virus
Intracytoplasmic basophilic	Pox viruses
Intranuclear	Herpesviruses, adenoviruses, parvoviruses and bornavirus
Intranuclear acidophilic	Herpes simplex virus
Intranuclear basophilic	Adenovirus
Both intra nuclear and intra cytoplasmic acidophilic	Measles, Canine distemper viruses

Inoculation effect of important viruses on embryonated eggs

Indication	Virus
Death of the embryo	NDV, fowl plague, paramyxovirus
Pinpoint haemorrhages at the occipital region, under aspect of the abdomen, inter digital space	NDV
Generalized congestion of the embryo	IBD, duck plague
Necrosis of the liver and enlargement of spleen	IBD, duck plague, IBHV
Curling and dwarfing of the embryo	Infectious bronchitis virus (Coronavrus)
Odematous embryo	Duck-hepatitis virus
Cherry red embryo	Blue-tongue virus
Greenish discoloration of allantoic fluid	Duck hepatitis-A virus
Urate precipitates in the egg contents	IBV and IBDV

Increase in quantity of allantoic / amniotic fluid	Lentogenic strains of NDV, EDS-76 virus
Pock lesions on CAM	Poxvirus, some herpesvirus, some reovirus and VSV
Odematous and congested CAM membrane	Duck plague, IBD
Haemagglutination of allantoic/amniotic fluid and direct examination under electron microscope	Orthomyxoviruses and paramyxoviruses

Route of inoculation

S. No.	Route	Age of the embryo	Viruses inoculated
1.	Yolk sac	5-7 days	Rabies virus, Herpes simplex virus, Avian encephalomyelitis virus, Marek's disease virus (Chlamydial and Rickettsial agents also)
2.	Allantoic cavity	9-10 days	Avian influenza, NDV, Avian adenovirus, IBV, Fowl plague, Inclusion body hepatitis virus
3.	Amniotic cavity	10-12 days	Influenza, type C, Mumps virus
4.	Chorio allantoic membrane (CAM)	10-12 days	Poxvirus, some herpesvirus, IBD virus, duck plague virus
5.	Intra cerebral	13-15 days	Rabies virus
6.	Intra venous	15 days	Encephalomyelitis virus, blue tongue virus
7.	De-embryonated eggs	15 days	Influenza vaccine production

Animal inoculation and route of inoculation for diagnosis of diseases

S. No	Disease	Lab animals	Route of inoculation
1.	Rabies	Mouse	Intra-cerebral
2.	Malignant catarrhal fever	Calf	Intra-venous
3.	Teschen disease	Piglet	Intra-muscular
4.	FMD	Guinea pig	Intra-dermal
5.	FMD	Unweaned mouse	Intra-peritoneal
6.	Swine vesicular disease	Piglet	Subcutaneous
7.	Rift valley fever	Ferret	Intra nasal
8.	Orf disease	Sheep	Scarification

9.	Vesicular stomatitis	Horse	Intra-lingual
10.	Poliomyelitis	Monkey	Oral
11.	Avian influenza	Chicken	Aerosol
12.	Infectious laryngeo tracheitis	Chicken	Intra-tracheal
13.	Pseudo-rabies	Mouse	Intra-conjunctival

Mycotoxins and their target organs

Species	Toxins	Target organ
A. flavus and *A. parasiticus*	Aflatoxins	Hepatotoxic, Nephrotoxic
A. ocheraceus	Ochratoxin	Nephrotoxic
Fusarium roseum	Trichothecane (t-2) toxin	Mucous membrane
Fusarium graminearum	Zearalenone	Reproductive system/Estrogenic
Pencillium citrinum	Citrinin	Nephrotoxin, Hepatotoxin
Penicillium rubrum	Rubratoxin	Hepatotoxin
A. nidulans and *A. versicolor*	Sterigmatocystin	Precursor of aflatoxin

Mycotoxicosis

Mycotoxicosis	Fungus	Source	Mycotoxin produced	Animals affected
Aflatoxicosis	*Aspergillus flavus* *A. parasiticus*	Ground nut, maize and nut crops	Afaltoxins B1, B2, G1, G2 (B1 most toxic)	Cattle, pig, poultry and dogs
Ergotism	*Claviceps purpura*	Seed heads of many grasses and grains	Ergotamine and ergometrine	Cattle, Sheep, Pig, Horse and Poultry
Facial Eczema	*Pithomyces charatarum*	Pasture, litter	Sporidesmin	Sheep and Cattle
Oestrogenism	*Fusarium graminareum*	Maize, Barley and cereals	Zearalenone	Pigs
Leukoencephalomalacia	*Fusarium moniliforme*	Maize	Fumonisins B1 (A1, A2, B2)	Horses and Donkey

Trichothecene toxicosis	Many fusarium species	Cereals	T-2 toxin, diacetoxy seriphenol	Many species
Ocharatoxicosis	*A. ochraceus* *P. viridicatum*	Barley, wheat and Maize	Ochratoxin - A	Pigs and Poultry.

Synonym of Important Diseases

S.No.	Synonym	Name of the disease	Causal agent
Plague			
1.	Fowl plague	Avian Influenza	Orthomyxovirus
2.	Cattle plague	Rinderpest	Morbillivirus/ Paramyxoviridae
3.	Equine plague	African horse sickness	Orbivirus/Reoviridae
4.	Goat plague	Peste-des-petits ruminants	Morbillivirus/ Paramyxoviridae
5.	Swine plague	Hog cholera/Classical swine fever	Pestivirus/Flavivirdae
6.	Rabbit plague	Tularemia	Francisella tularensis
7.	Duck plague	Duck virus enteritis	Anatid herpesvirus/ Herpesvirus
8.	Cat plague	Feline panleukopenia	Parvovirus
9.	White plague	Tuberculosis	Mycobacterium tuberculosis
10.	Bubonic plague	Black death	Yersinia pestis
11.	Lung plague	CBPP	Mycoplasma mycoides subsp. Mycoides
Fever			
1.	Swamp fever	Equine Infectious Anemia	Retrovirus
2.	Aphthous fever	Foot and Mouth Disease	Aphthovirus/ Picornaviridae
3.	Red water fever	Babesiosis	Babesia species
4.	Catarrhal fever of sheep	Bluetongue	Orbivirus/Reoviridae
5.	Malta fever	Brucellosis	Brucella melitensis/abortus
6.	Deer fly fever	Tularemia	Francisella tularensis

7.	Shipping fever	Haemorrhagic septicaemia	Pasteurella multocida type B
8.	Parrot fever	Psittacosis	Clamydia psittaci
9.	Enteric fever	Salmonellosis	Salmonella spp.
10.	Splenic fever	Anthrax	Bacillus anthracis
11.	Scarlet fever	Streptococcosis	Streptococcus pyogenes
		AIDS	
1.	Canine AIDS	Canine Ehrlichiosis	Ehrlichia canis
2.	Equine AIDS	Equine Infectious Anemia	Retrovirus
		Distemper	
1.	Equine distemper	Strangles	Streptococcus equi
2.	Feline distemper	Feline panleukopenia	Parvovirus
3.	Canine distemper	Carre's disease	Morbillivirus/ Paramyxoviridae
4.	Avian distemper	Ranikhet disease	Rubulavirus/ Paramyxoviridae/ APMV-1
		Black	
1.	Black leg	Black quarter	Clostridium chouvoei
2.	Black tongue	Pellagra	Vit. B_3 deficiency
3.	Black head	Histomoniasis	Histomonas meleagridis
4.	Black death	Plague	Yersinia pestis
5.	Black disease		Clostridium novyi
		Pseudo	
1.	Pseudo cowpox	Milker's nodule	Parapox virus
2.	Pseudo rabies	Aujeszky disease/ Infectious bulbar paralysis/ Mad itch disease	Herpesvirus
3.	Pseudo glanders	Equine epizootic lymphangitis/Melioidosis	Burkholderia pseudomallei
4.	Pseudo tuberculosis	-	Yersinia pseudotuberculosis
5.	Pseudo FMD	Bluetongue	Orbivirus
6.	Pseudo lumpy skin disease		Bovid herpesvirus 2
7.	Pseudo rinderpest	PPR	Morbillivirus

Eye			
1.	Blue eye	Infectious canine hepatitis/ Rubarth disease	Adenovirus
2.	Pink eye in cattle	-	Moraxella bovis
3.	Pink eye in horse	Equine flu	Equine influenza
4.	Pearl eye/ Grey eye	Marek's disease	Gallid herpesvirus - 2
5.	Black eye	Ranikhet/New castle disease	Rubulavirus/APMV - 1

Immunoglobulins

Antibody	Remark
IgG	» Only antibody which can pass through placenta » Found in highest concentration in the blood » Smallest immunoglobulin » IgG rarely activates the classical complement pathway
IgM	» Largest antibody molecule » Normally secreted as pentamers » First antibody to appear in primary immune response » Hinge region is absent » Have an additional, fourth constant domain (CH4) » J chain present » More efficient than IgG at complement activation and opsonization
IgA	» Synthesized in the walls of the intestine, respiratory tract, urinary system, skin, and mammary gland. » Normally secreted as dimers » J chain present » Secretory component + IgA dimers : Secretory IgA (sIgA). » Major immunoglobulin in the external secretions of non-ruminants » IgA does not activate the classical complement pathway and can't act as an opsonin
IgD	» Absent in chickens, rabbits or cats. » Heat labile
IgE	» Mainly seen in Allergic and Parasitic condition » Reagenic antibody » Mediates Type-I Hypersensitivity or Anaphylaxis » Bind tightly to mast cells and basophils » IgE has the shortest half-life » Heat labile

IgY	» Major antibody in birds and reptiles » Found in high concentrations in chicken egg yolk » Functionally similar to mammalian IgG

Important Terminology

» **Virulence:** Ability of a microorganism to cause infection

» **Haptens:** Small antigens that cannot elicit antibody response individually but become immunogenic when coupled with larger molecules

» **Antitoxins:** Antibodies against exotoxins

» **Exotoxins**: Highly immunogenic toxin secreted mainly by Gram positive bacteria

» **Endotoxins**: Lipopolysaccharides present in cell wall of Gram Negative bacteria

» **Toxoids**: When exotoxins are precipitated by mild protein denaturing agents (formaldehyde), the exotoxin loses its pathogenicity but retains its immunogenicity called toxoids

» **Autoantigens:** Normal body components which against immune response is elicited

» **Heterophile antigens:** Immunologically related groups of antigens present in different species of animals and microbes

» **Antibody:** Glycoproteins synthesized by plasma cells of immune system in response to antigenic stimulation

» **Hinge region:** A region on antibody, rich in **proline** and **cysteine** which is responsible for flexibility.

» **Paratope:** The antigen-combining site of an antibody

» **Epitope (Antigenic determinant)**: Part of an antigen which is recognized by antibody

» **Antigen presenting cells (APCs)**: Cells that displays antigen with the help of MHC on their surfaces (Ex: Dendritic cells, Macrophages and B cells)

» **Serological test:** Tests perform for detection of antibodies in the serum.

» **Primary binding tests** - Tests that only depend on the interaction between antigen and antibody (Ex: RIA, ELISA, IFA)

» **Secondary binding tests** - In these tests, the result of antigen-antibody interaction (agglutination, precipitation, complement fixation) is measured *in-vitro*. (Ex: HI, AGID, CFT)

» **Tertiary binding tests** - In these tests, actual protective effects of antibodies are measured *in-vivo* (in living system). Ex: Neutralisation assay

» **Specificity:** The ability of an assay to detect only the target (Target specific)

» **Sensitivity:** The ability of an assay to detect even very minute amount of the target

» **Prozone reaction:** When concentration of antibody is in excess it will not produce

agglutination. This phenomenon is called **Prozone reaction**

» **Flagellum**: Organ of locomotion in bacteria
  - **Monotrichous** - Bacteria having single polar flagellum
  - **Lophotrichus** - Having tufts of flagella at one end
  - **Amphitrichous** - Having tufts of flagella at both ends
  - **Peritrichous** - Having flagella all around the surface of bacteria

» Growth of bacteria
  - **Generation** is the interval for the formation of two cells from one cell
  - **Lag phase:** The brief period of no activity is called as lag phase.
  - **Exponential phase:** During this phase there is rapid increase in the number of bacteria.
  - **Stationary phase:** During this phase there is no increase in number of cells.
  - **Death phase:** The death phase is also exponential but it is slow. It is due to lack of nutrients.

» **Classification of bacteria on the basis of their habitat**
  - Psychrophile - (13°C)/ -20°C to +10°C
  - Mesophile - (39°C)/ 20°C to 45°C
  - Thermophile - (60°C and More)
  - Hyperthermophile - (88°C - 122°C)
  - Hyperthermophile - (105)

» **Halophile** - Salt loving, prefer NaCl concentration between 1-30%

» **Osmophile** - Grow in high sugar concentration

» **Xerophile** - Grow in very dry conditions

» Yield of ATP molecules in respiration **: 38 ATP**

» **Mutation:** inheritable change in base sequence of nucleic acid

» **Point mutation:** Mutations involving one or very few base pairs are referred as **point mutation.**

» **Transduction**: process in which DNA is transferred from cell to cell through viruses that infect bacteria called as **Bacteriophages**

» **Conjugation:** process of transfer of DNA directly from one bacterial cell to another cell by a mechanism that requires cell-to-cell contact

» **Plasmids:** are also referred as extra chromosomal DNA

» **Transposition:** Certain genes in bacteria are capable of shifting from one location to

another location in the chromosome

» **Disinfectants** - Chemicals that are used to kill microorganisms on inanimate objects

» **Antiseptics** - Chemicals that are relatively in toxic and are used to kill or inhibit microorganisms **in living tissues.**

» **Germicides** - Generally the chemicals with antimicrobial actions

» **Antibiotics** - The substances obtained from microorganisms with antimicrobial actions

» **First report of viruses:** by **Dimitrii Ivanowsky**

» **First animal virus** - Foot and mouth disease by **Loeffler and Paul Frosch**

» **First human virus** – Yellow fever by **Reeds**

» **First plant virus** – Tobacco mosaic disease (TMV) by **Dimitrii Ivanowsky**

» The DNA found in the chromosome is attached with a protein called **histones** and this protein is also responsible for staining property (basic staining)

» The two strands of DNA are joined together by - **Hydrogen Bonds**

» The most commonly used stain for fungal identification is - **Lactophenol Cotton Blue**

» The media that are commonly used for fungal isolation - **Sabouraud's dextrose agar**

» Substances produced by pathogens that cause damage to phagocytes - **Aggressins**

» **Endotoxins** are part of the outer cell wall of bacteria

» **Endotoxins** are associated with cell wall of Gram-negative bacteria -**Lipopolysaccharide**

» Extra cellular bacterial proteins that function as invasion

Invasin	Produced by Bacteria
Leucocidin	*Staphylococcus aureus*
Lecithinase	*Clostridium perfringens*
Lethal factor	*Bacillus anthracis*
Coagulase	*Staphylococcus aureus*

Few important points to be remembered

1. Father of Microbiology - Louis Pasteur
2. Father of Bacteriology - Robert Koch
3. Koch's postulates was derived by using - *Bacillus anthracis*
4. Small pox vaccine was developed by - Edward Jenner (1796)
5. Rabies vaccine was developed by - Louis Pasteur
6. Discovery of FMD Virus - Loeffler and Frosch

7. Rabies vaccination was first received by - Joseph Meister
8. Chinese letter arrangement and metachromatin granules are features of - Corynebacteria spp.
9. Kanagawa reaction is exhibited by - *Vibrio parahaemolyticum*
10. Quellung reaction is exhibited by - *Streptococcus pneumonia*
11. The bacteria that is used to evaluate the phenol coefficient using Rideal Walker method - *Salmonella Typhi*
12. Greyish-white medusa head type of colony is shown by *Bacillus anthracis* in - Nutrient agar
13. Growth of *E. rhusiopathiae* is favoured by - Tryptophan
14. Tuberculous lesions are prominent in digestive tract rather than in respiratory tract in - Poultry
15. Characteristic features of abortion in cattle caused by *B. abortus* - Necrotic placentitis and leathery placenta
16. Type of vaccines used against brucellosis in calves and cows - Strain 19 (live) and Strain 45/20 (killed) respectively
17. Kennel Cough in dogs is caused by – *Bordetella bronchiseptica*
18. Pasteurella, Yersinia and Listeria have one thing in common as part of their staining character - Bipolar staining
19. Classification of Pasteurella species is done by - Robert's and Carter's serotyping
20. The best medium for an enhanced growth of campylobacter - Thiol medium
21. Colour of colonies produced by *E. coli* in Mc Konkey's agar - Pink
22. Colour of colonies produced by *Salmonella spp.* in Mc Konkey's agar – Colourless
23. Ringer and Gillespie medium is used for - Leptospira spp.
24. 'Symptomatic anthrax' is the synonym for - Black Quarter
25. Para anthrax in pigs is caused by - *Clostridium septicum*
26. Most susceptible species to anthrax is - Sheep
27. Instrument used to perform the Polymerase Chain Reaction - Thermocycler
28. PCR is discovered by - Kary mullis
29. Granules present within the Guarnieri body - Paschen's granules
30. Medium used for culture of mycoplasma - PPLO Agar and Frey's medium
31. In McFaydean reaction color of organism and capsule - Blue and Pink respectively

32. Bursitis in horse caused by *Brucella abortus* - Poll evil/Fistulous withers
33. Bottle brush appearance in Gelatin stab is growth feature of - *Erysipelothrix rhusiopathiae* and *Clostridium perferinges*
34. Largest antibody type - Ig M
35. Antibody present in the mucosal surface - Ig A
36. Viral genome contains - Either RNA or DNA
37. Virus which contain reverse trascriptase enzyme - Retroviridae
38. Organism devoid of cell wall - Mycoplasma (Requires sterol for growth)
39. Most abundant leukocytes type in bovines - Lymphocyte
40. Most abundant leukocytes type in dogs - Neutrophils
41. Reference test for rabies - FAT
42. T-cell maturation occurs in - Thymus
43. Smallest virus - PBFD virus (Circovirus) < CIA virus < FMD virus
44. Diagnosis of camphylobactor is done by - Vaginal mucous agglutination test
45. Motility of bacteria is due to - Fimbriae
46. 'Bioterrorism' associated with - Anthrax
47. Diseases associated with mycoplasma are - CCPP, CBPP and CRD
48. MHC-I is also called as - endogenous antigen
49. Adjuvant used in inactivated vaccine - Aluminium hydroxide
50. Vero cells was discovered from - Kidney of African green monkey
51. Rat bite fever or haver hill fever is caused by - *Streptobacillus moniliformis*
52. First recombinant viral vaccine - FMD vaccine
53. Self-replicating infectious proteins are called - Prions (Discovered by Prussiner)
54. ELISA is discovered by - Engvall & Perlmann
55. Demonstration of DNA in nucleus is done by - Feulgen stain
56. Demonstration of RNA is done by - Pyronin stain
57. Stain for capsule of bacteria - India ink
58. Rare diseases and their etiology

Disease	Causal agent
Corridor disease	Theileria lawrensi
Border disease	Togoviridae
Sleepy foal disease	Actionbacillus equlli
Edema disease (pigs)	E. coli
Gilchrist disease(man)	Blastomycosis
Nairobi sheep disease	Bunyavirus
Vent disease	Treponema cuniculi
Graves disease	Exophthalmic goiter
Pullet disease	Reo virus
Cat scratch disease	Bartonella henselae
Kysanur forest disease	Flavivirus

Classification of Fungi

Phylum fungi is divided into four classes

1. **Class** - Phycomycetes: The Phycomycetes are the most primitive class of fungi. They produce broad, aseptate hyphae and reproduce asexually by forming sporangia that contain sporangiospores. Sexual reproduction occurs by means of thick walled resting spores, which can be zygospores or oospores.

2. **Class** - Ascomycetes: Ascomycetes are represented by two morphologically distinct types. The first type has unicellular, round or oval forms reproducing asexually by budding of blastospores. The perfect yeast, genus Saccharomyces, represents this type. If conditions are favourable, sexual ascospores are formed. Four or eight ascospores develop within each sac-like enclosure called an ascus. The asci break open to release the ascospores.

   The second type of Ascomycetes has septate hyphae producing filamentous forms, which reproduce asexually by spores called conidia and sexually by ascopores. In this type, the asci are usually enclosed within a tightly meshed network of hyphae (mycelta) called perithecium.

3. **Class - Basidiomycetes:** Basidiomycetes develop sexual basidiospores from specialized club shaped structures called basidia. Each basidium usually bears four exogenous basidiospores resembling toes on a foot.

4. **Class - Deuteromycetes:** The majority of pathogenic fungi belong to this class. Deuteromycetes (fungi imperlecti) are composed of those fungi that lack a demonstrable means of sexual reproduction, therefore, are considered imperfect. The Deuteromycetes are represented by two morphologically distinct types: a filamentous (mold) form and an imperfect yeast form resembling the perfect yeast.

Asexual spores of two major types are produced in this class. These are the thallospores and conidia. The thallospores are formed by a change in portions of the thallus or body of the fungus and include the arthrospores, blastospores and chlamydospores The conidia are produced by abstrictions from specialized hyphae called conidiophores. Large conidia may be called macroconidia and small conidia as microconidia.

Dermatophytosis

» **Dermatophytosis** is an infection produced by a dermatophytic fungus in the dead keratinized tissues - the nails, hair, and skin.
» Many dermatophytes have evolved into obligate parasites.
» Dermatophyte infections are contagious, and a zoonotic source of infections for humans.
» Infections from animal to human are referred to as **zoophilic**
» Infections from soil to animal or human are referred to as **geophilic** (Ex: *Microsporum gypseum*).

Common Dermatophytes

Pathogens	**Animals affected**
Trichophyton mentagrophytes	All domestic animals
Trichophyton. verrucosum	Cattle, sheep
Trichophyton gallinae	Fowl
Trichophyton equinum	Horses
Microsporum canis	Predominately dogs and cats primates and horses
Microsporum nanum	Swine and humans
Microsporum gypseum	Dogs, cats, horses, and humans
Trichophyton megnini	Poultry

Multiple Choice Questions

1. Pox virus which does not grow on CAM is

a. Para Pox b. Cow pox
c. Capri pox d. None of the above

2. "Bipolar staining" is a feature of

a. Bacillus anthracis
b. Pasteurella multocida
c. Clostridium tetani
d. Mycobacterium avium

3. Friedlander's bacillus is

a. Bacillus anthracis
b. Pasteurella multocida
c. Klebsiella pneumoniae
d. Mycobacterium avium

4. "Drumstick shaped" or tennis rackets shaped bacteria is

a. Bacillus anthracis
b. Pasteurella multocida
c. Clostridium tetani
d. Mycobacterium avium

5. Ascolis test is used for diagnosis of

a. Anthrax b. Black quarter
c. Braxy d. Tetanus

6. Cervical Lymphadenitis or Jowl abscess in pigs is caused by

a. *Listeria monocytogenes*
b. *Erysipelothrix rhusiopathiae*
c. *Sreptococcus porcinus*
d. *Staphylococcus hyicus*

7. Splendore-Hoeppli material is a characteristic microscopic feature of

a. Blastomycosis
b. Coccidioidomycosis
c. Actinomyces bovis
d. Cryptococcus neoformans

8. Woolsorter's disease is caused by

a. Erysipelothrix rhusiopathiae
b. Clostidium botulinum
c. Pasteurella multocida
d. Bacillus anthracis

9. Mycotic abortion is caused by

a. Mycoplasma spp.
b. Staphylococcus Spp.
c. Aspergillus spp.
d. None of the above

10. Foot rot in sheep is caused by

a. Dermatophilus congolensis
b. Corynebacterium pyogenes
c. Bacterioides nodosus
d. Clostridium Perfringens

11. 'Abortion storms' in sheep is caused by

a. Dermatophilus congolensis
b. Corynebacterium pyogenes
c. Campylobacter jejuni
d. Campylobacter foetus

12. Lamsiekte in cattle and sheep is caused by

a. Clostridium perfringens Type A
b. Clostridium perfringens Type B
c. Clostridium botulinum Type D
d. Clostridium novyi Type B

13. Bacterial strain used for the production of BCG vaccine is

a. Nakayama b. PM-1503-3M
c. 17-D d. Danish 1331

14. "Wet tail" in hamster is caused by

a. Corynebacterium renale
b. Corynebacterium pyogens
c. Streptococcus spp.
d. Lawsonia intracellularis

15. Corynebacterium kutscheri is a gram-positive bacillus that infects

a. Rat and Mice b. Rabbit
c. Hamster d. Guinea pig

16. Rocky mountain spotted fever is caused by

a. R. tsutsugamushi
b. R. rickettsii
c. R. prowazekii
d. R. typhi

17. Psittacosis or Ornithosis in birds is caused by
a. *Cowdria ruminatum*
b. *Chlamydia psittaci*
c. *Coxiella burnetii*
d. *Morexella bovis*

18. Bovine farcy is caused by
a. Dermatophilus congolensis
b. Corynebacterium pyogenes
c. Campylobacter jejuni
d. Mycobacterium farcinogenes

19. Q fever is caused by
a. Cowdria ruminatum b. Chlamydia psittaci
c. Coxiella burnetii d. Morexella bovis

20. Diene's staining is used for
a. Mycoplasma b. Bacteria
c. Fungus d. Chlamydia

21. Suppurative bronchopneumonia and fibrinopurulentpleuritis in guinea pig is caused by
a. Staphylococcus aureus
b. Streptococcus pneumonia
c. Streptococcus zooepidemicus
d. Bordetella bronchiseptica

22. Suppurative lymphadenitis in guinea pigs is caused by
a. Staphylococcus aureus
b. Streptococcus pneumonia
c. Streptococcus zooepidemicus
d. Bordetella bronchiseptica

23. A gram-negative bacterium normally inhabiting the intestinal tract of rats, mice, and numerous other animals is
a. Clostridium piliformis
b. Klebsiella pneumoniae
c. Pasteurella multocida
d. Corynebacterium kutscheri

24. Inclusion conjunctivitis in guinea pig is caused by
a. Chlamydia psittaci
b. Streptococcus pneumonia
c. Streptococcus zooepidemicus
d. Bordetella bronchiseptica

25. Most common agent for dermatophytosis in guinea pigs is
a. Trichophyton megnini
b. Microsporum canis
c. Trichophyton mentagrophytes
d. Histomonas capsulatum

26. The reference test for diagnosis of rabies is
a. FAT b. AGPT
c. Agglutination d. ELISA

27. McFadyean reaction is a feature of
a. Bacillus anthracis
b. Pasteurella multocida
c. Clostridium tetani
d. Mycobacterium avium

28. Tropical canine pancytopenia is caused by
a. Ehrlichia canis
b. Rickettsia rickettsii
c. Anaplasma marginale
d. Neorickettsia helminthoeca

29. Edema disease of swine is caused by
a. E coli
b. Salmonella typhimurium
c. Staphylococcus aureus
d. Streptococcus pyogens

30. Contagious caprine pleuropneumonia is caused by
a. Mycoplasma mycoides subsp. mycoides
b. Mycoplasma mycoides subsp. capri
c. Mycoplasma agalactiae
d. Streptococcus pyogens

31. Contagious bovine pleuropneumonia is caused by
a. Mycoplasma mycoides subsp. mycoides
b. Mycoplasma mycoides subsp. capri
c. Mycoplasma agalactiae
d. Streptococcus pyogens

32. Pulpy Kidney Disease is caused by
a. Clostridium perfringens Type A
b. Clostridium perfringens Type B
c. Clostridium perfringens Type C
d. Clostridium perfringens Type D

33. Match the following

1. Yellow lamb disease	A) *Cl. perfringens* Type A
2. Lamb dysentery	B) *Cl. perfringens* Type B
3. Struck	C) *Cl. perfringens* Type C
4. Overeating disease	D) *Cl. perfringens* Type D
5. Enterotoxaemia	E) *Cl. perfringens* Type E

a. 1-A, 2-C, 3-B, 4-D, 5-E
b. 1-A, 2-B, 3-C, 4-D, 5-E
c. 1-E, 2-C, 3-B, 4-D, 5- A
d. 1-D, 2-A, 3-B, 4-C, 5-E

34. "Swine strangles" is caused by

a. Listeria monocytogenes
b. Erysipelothrix rhusiopathiae
c. Sreptococcus porcinus
d. Staphylococcus hyicus

35. "Pizzle rot" (Ovine Posthitis) in sheeps is caused by

a. Corynebacterium renale
b. Corynebacterium pyogens
c. Streptococcus spp.
d. Campylobactor foetus

36. "Facial Eczema" in cattle is caused by

a. Micropolyspora faeni
b. Blastomyces bovis
c. Pithomyces chartarum
d. Histoplasma capsulatum

37. The term "epsilon" is associated with

a. Brucellosis
b. Enterotoxaemia
c. Marek's Disease
d. Erysipelas

38. Winter dysentery in cattle is caused by

a. Bovine viral diarrhoea
b. Corynebacterium pyogenes
c. Campylobacter jejuni
d. All of the above

39. Contagious agalactia is caused by

a. Mycoplasma mycoides subsp. mycoides
b. Mycoplasma mycoides subsp. capri
c. Mycoplasma agalactiae
d. Streptococcus pyogens

40. Heart water disease is caused by

a. Ehrlichia ruminatum (Cowdria ruminatum)
b. Ehrlichia canis
c. Coxiella burnetii
d. Rickettsia rickettsia

41. Attenuated laboratory strain of rabies virus is called

a. Fixed virus
b. Street virus
c. Latent virus
d. Virulent virus

42. Mode of transmission of IBR virus is

a. Venereal
b. Inhalation
c. Semen
d. All of the above

43. Infectious necrotic hepatitis is caused by

a. Clostridium perfringens Type A
b. Clostridium perfringens Type B
c. Clostridium novyi Type A
d. Clostridium novyi Type B

44. Erythritol sugar plays an important role in pathogenesis of

a. Clostridium spp.
b. Brucella spp.
c. Bacillus spp.
d. Corynebacterium spp.

45. Glasser's disease is caused by

a. Haemophilus parasuis
b. Brucella suis
c. Staphylococcus hyicus
d. Corynebacterium diphtheriae

46. Farmer's lung in cattle is caused by

a. Micropolyspora faeni
b. Blastomyces bovis
c. Pithomyces chartarum
d. Histoplasma capsulatum

47. Which bacterium is predisposed by Fasciola hepatica infestation

a. Bacillus spp.
b. Clostridium spp.
c. Leptospira spp.
d. Pasturella spp.

48. Stockyards disease is caused by
a. Erysipelothrix rhusiopathiae
b. Clostidium botulinum
c. Pasteurella multocida
d. Bacillus anthracis

49. Urine is chief source of contamination in
a. Brucellosis b. Leptospirosis
c. Listeriosis d. Canine Distemper

50. Enteric fever is caused by
a. Brucellosis b. Leptospirosis
c. Listeriosis d. Salmonellosis

51. Factor required for growth of *Haemophilus spp.* is
a. Haemin b. NAD
c. X and V factor d. All of the above

52. Mushy chick disease or omphalitis is caused by
a. Corynebacterium pyogenes
b. Streptococcus aureus
c. Erysepelothrix rhusiopathae
d. E. coli

53. Non motile serotype of salmonella is/are
a. Salmonella pullorum
b. Salmonella gallinarum
c. Salmonella dublin
d. Botha and b

54. Turkey coryza is caused by
a. Pasteurella aviseptica
b. Bordetella avium
c. Haemophilus paragallinarum
d. Salmonella gallinarum

55. Largest single reservoir of salmonella organism is
a. Poultry b. Cattle
c. Camel d. Pig

56. Fowl paratyphoid is caused by
a. Salmonella pullorum
b. Salmonella gallinarum
c. Salmonella typhimurium
d. Salmonella typhosa

57. Lyme disease is caused by
a. Cowdria ruminatum
b. Chlamydia psittaci
c. Coxiella burnetii
d. Borrelia burgdorferi

58. Kume and Page scheme is used for the classification of
a. Haemophilus spp.
b. Brucella spp.
c. Staphylococcus spp.
d. Streptococcus spp.

59. "Gall Sickness" is also known as
a. Micropolysporosis b. Blastomycosis
c. Anaplasmosis d. Histoplasmosis

60. Periodic ophthalmia in horses is caused by
a. Bacillus spp. b. Clostridium spp.
c. Leptospira spp. d. Pasturella spp.

61. Dark field illumination of *Leptospira* can be observed in
a. Urine b. Blood
c. Serum d. Feces

62. Parrot fever is caused by
a. Cowdria ruminatum
b. Chlamydia psittaci
c. Coxiella burnetii
d. Rickettsia rickettsii

63. Kanagawa reaction is shown by
a. Vibrio parahaemolyticum
b. Rickettsia rickettsii
c. Anaplasma marginale
d. Neorickettsia helminthoeca

64. Poll evil in horses is caused by
a. Clostridium tetani b. Actinomyces bovis
c. Brucella abortus d. Both b and c

65. White scour is caused by
a. E coli
b. Salmonella typhimurium
c. Staphylococcus aureus
d. Streptococcus pyogens

66. Heat resistant ability of spore forming bacterium is because of
a. Mycolic acid
b. Teichoic acid
c. Ca dipicolinic acid
d. Lipopolysaccharide

67. Stuttgart disease is caused by
a. Bacillus spp.
b. Clostridium spp.
c. Leptospira spp.
d. Pasturella spp

68. In humans leptospirosis is known as
a. Pearl disease
b. Rubarth's disease
c. Weil's disease
d. Carre's disease

69. Which is a spore forming bacteria
a. Erysipelothrix rhusiopathiae
b. Clostidium botulinum
c. Bacillus anthracis
d. Both b and c

70. "Silage disease" in cattle is caused by
a. Listeria monocytogenes
b. Erysipelothrix rhusiopathiae
c. Streptococcus equi
d. Chlamydia psittacii

71. Cold enrichment is done for isolation of
a. Listeria monocytogenes
b. Erysipelothrix rhusiopathiae
c. Streptococcus equi
d. Chlamydia psittacii

72. "Strangles" is caused by
a. Listeria monocytogenes
b. Erysipelothrix rhusiopathiae
c. Sreptococcus equi
d. Staphylococcus hyicus

73. "Scarlet fever" is caused by
a. Listeria monocytogenes
b. Erysipelothrix rhusiopathiae
c. Sreptococcus pyogens
d. Staphylococcus hyicus

74. "Toxic shock syndrome" is caused by
a. Listeria monocytogenes
b. Erysipelothrix rhusiopathiae
c. Sreptococcus pyogens
d. Staphylococcus hyicus

75. Jowl abscesses is caused by
a. Listeria monocytogenes
b. Erysipelothrix rhusiopathiae
c. Sreptococcus porcinus
d. Staphylococcus hyicus

76. Greasy pig disease or Exudative epidermitis is caused by
a. Listeria monocytogenes
b. Erysipelothrix rhusiopathiae
c. Sreptococcus pyogens
d. Staphylococcus hyicus

77. Botryomycosis is caused by
a. Listeria monocytogenes
b. Erysipelothrix rhusiopathiae
c. Sreptococcus pyogens
d. Staphylococcus aureus

78. Bumble foot is caused by
a. Listeria monocytogenes
b. Erysipelothrix rhusiopathiae
c. Sreptococcus pyogens
d. Staphylococcus aureus

79. Most virulent species of brucella is
a. B. abortus
b. B. melitensis
c. B. canis
d. B. ovis

80. Forage poisoning is caused by
a. Cl. tetani
b. Cl. botulinum
c. Cl. septicum
d. Cl. perfringens

81. Strawberry foot-rot in sheep is caused by
a. Dermatophilus congolensis
b. Corynebacterium pyogenes
c. Campylobacter jejuni
d. Clostridium perfringens

82. Infectious bovine keratoconjunctivitis (Pink eye) in cattle is caused by
a. Dermatophilus congolensis
b. Corynebacterium pyogenes
c. Campylobacter jejuni
d. Moraxella bovis

83. Scrub typhus is caused by
a. R. tsutsugamushi b. R. rickettsii
c. R. prowazekii d. R. typhi

84. Enzootic abortion of ewes is caused by
a. Chlamydophila abortus
b. Trichomonas foetus
c. Campylobactor foetus
d. Brucella abortus

85. 'Darling disease' is caused by
a. Aspergillus fumigatus
b. Aspergillus flavus
c. Mycoplasma gallisepticum
d. Histoplasma capsulatum

86. Epidemic typhus fever is caused by
a. R. tsutsugamushi b. R. rickettsii
c. R. prowazekii d. R. typhi

87. Special stain used to demonstrate mycobacterium is
a. Gridley stain b. Oil Red O
c. Z.N. Stain d. Gram's Stain

88. Ability of an organism to cause disease is
a. Pathogenecity b. Virulence
c. Morbidity d. Lethality

89. Hotis test is used for detection of mastitis caused by
a. Streptococcus pyogens
b. Salmonella typhimurium
c. Staphylococcus aureus
d. Streptococcus agalactiae

90. Plasmid mediated transferable drug resistance occurs due to
a. Transformation b. Transduction
c. Conjugation d. Transfection

91. Teichoic acid is present in
a. Cell wall of Gram positive bacteria
b. Cell wall of Gram negative bacteria
c. Cell membrane of Gram positive bacteria
d. Cell membrane of Gram negative bacteria

92. In bacterial growth, involution forms are seen during
a. Lag phase
b. Log phase
c. Stationary phase
d. Phase of decline

93. Which of the following is/are arboviral infection
a. African Swine fever
b. African horse sickness
c. Bluetongue
d. All of the above

94. Coggin's test is internationally accepted test for diagnosis of
a. Avian leukosis complex
b. African horse sickness
c. Equine infectious anaemia
d. Avian influenza

95. Wing web method is used for vaccine administration in
a. Marek's disease
b. Fowl pox
c. IBD
d. All of the above

96. Autogenous wart tissue vaccine can be employed for control of
a. Marek's disease
b. Papillomatosis
c. Avian leukosis complex
d. All of the above

97. Single linear molecule of ds DNA is genomic characteristics of
a. Adeno virus
b. Pox virus
c. Herpes virus
d. All of the above

98. Genomic identification is done by
a. PCR and DNA probes
b. DNA probes and Western blot assay
c. PCR and Western blot assay
d. None of the above

99. Which of the following is NOT involved in bacterial conjugation?
a. F+ cells b. F- cells
c. Somatic pili d. Sex pili

100. The acquisition of DNA molecule by bacterial cells from temperate phage is called
a. Transformation
b. Transduction
c. Conjugation
d. None of the above

101. Production of ATP is
a. Less in fermentation than in respiration
b. Less in respiration than in fermentations
c. Equal in both
d. All of the above

102. Bovine abortion is caused by
a. Brucella abortus
b. Aspergillus fumigatus
c. Listeria monocytogenes
d. All of the above

103. Toxic component present in bacterial endotoxin (Lipopolysachharide) is
a. Lipid A
b. Protein A
c. Carbohydrate C
d. None of the above

104. Struck in sheep is caused by
a. Clostridium perfringens type A
b. Clostridium perfringens type B
c. Clostridium perfringens type C
d. Clostridium perfringens type D

105. Virulence factor/s associated with *Corynebacterium renale* is/are-
a. Coagulase b. Fimbrie
c. Phospholipase D d. All of the above

106. Lecithinase activity of *Clostridium perfringens* can be demonstrated by
a. CAMP test
b. McFadyean reaction
c. Nagler reaction
d. All of the above

107. Serpentine cord colonial morphology is shown by
a. Leptospira seroptye
b. Mycoplasma gallisepticum
c. Mycobacterium tuberculosis
d. Actinomyces bovis

108. Selective enrichment media for growth of poultry *Salmonella* is
a. Tetrathionate broth
b. Selenite broth
c. Rappaport vasiliadis soya broth
d. All of the above

109. Blood smear for bacteria are fixed by
a. Methyl alcohol b. Ethylene glycol
c. 10% formalin d. Nacked flame

110. Autoclaving of surgical instruments are carried out under
a. 121°C under 15 lbs pressure for 15 min
b. 350°C under 15 lbs pressure for 15 min
c. 150°C under 15 lbs pressure for 15 min
d. 250°C under 15 lbs pressure for 15 min

111. Which component of bacterial cell has antiphagocytic property?
a. Cell wall b. Fimbriae
c. Capsule d. Spore

112. Bacterial spore consists of
a. Calcium dipicolinate
b. Ribosomes
c. Bacterial DNA
d. All of the above

113. Animals that have recovered from disease and continues to harbour pathogens in their body are called
a. Paradoxical carrier
b. Contact carrier
c. Convalescent carrier
d. Healthy carrier

114. Use of *embryonated* chicken *eggs* for cultivation of virus was introduced by

a. Goodpasture
b. Louis Pasteur
c. Landsteiner
d. Enders

115. Bacteria with thick cell wall are classified in

a. Firmicutes b. Gracilicutes
c. Tenericutes d. Mollicutes

116. Which component of bacterial endotoxin is responsible for biological activity or toxicity?

a. O antigen
b. Polysaccharide
c. Lipid A
d. None of the above

117. Spores produced by fragmentation of hyphae are

a. Sporangiospores
b. Chlamydospores
c. Blastospores
d. Arthrospores

118. First animal virus was discovered by

a. Loeffler and Frosch
b. Louis Pasteur
c. Edward Jenner
d. None of the above

119. Negri bodies can be stained by

a. Koster's stain
b. Seller's stain
c. Macchiavello's stain
d. Gridley's stain

120. Koster's stain is used for diagnosis of

a. Trichomoniasis
b. Brucellosis
c. Aspergillosis
d. Listeriosis

121. The resolution limit of ordinary microscope is

a. 200 nm b. 200μm
c. 250μm d. 400 nm

122. Cell cultures used for Fixed strain of rabies virus is

a. Vero b. BHK-21
c. Both a and b d. MARC-145

123. The shortest distance by which two particles are separated to give distinct images is called

a. Magnification
b. Numerical aperture
c. Resolving power
d. None of the above

124. Among the following enriched agar is

a. SD agar b. EMB agar
c. Nutrient agar d. Blood agar

125. The ribosome system in bacteria is

a. 70 S b. 75 S
c. 80 S d. 85 S

126. Spores are destroyed through

a. Pasteurization b. Uperization
c. Tyndalisation d. UV sterilization

127. Acute phase proteins is/are

a. Fibronectin
b. Lectins
c. Iron binding proteins
d. All of the above

128. In laminar air flow unit most commonly used filter is

a. Membrane filter
b. HEPA
c. Seitz filter
d. Sintered glass filter

129. The sentinel cells are

a. Macrophages b. Mast cells
c. Dendritic cells d. All of the above

130. Gram's iodine in Gram's staining act as

a. Primary stain
b. Secondary stain
c. Fixative
d. Mordant

131. Antons test is done for
a. Listeria
b. Yersinia
c. Both a and b
d. None of the above

132. Heat resistance of spores is due to
a. Dehydrated state
b. Presence of large amounts of calcium dipicolinate
c. Low metabolic activity
d. All of the above

133. Proteus is positive for
a. H_2S
b. PPA reaction
c. Urease
d. All of the above

134. Phase variation in salmonella can be studied using
a. MAT test
b. CAMP test
c. Cragie tube test
d. SAT test

135. Temperature and duration of sterilization in hot air oven is
a. 116°C-1 hour
b. 121°C-1 hour
c. 220°C-30 minutes
d. 160°C-1 hour

136. Morse code appearance is seen in
a. Bordetella b. Haemophilus
c. Actinobacillus d. Pasteurella

137. Tumbling motility is seen is
a. Bacillus b. Listeria
c. Leptospira d. Clostridia

138. Chocolate agar is selective for isolation of *Haemophilus* because it supplies
a. V factor
b. X factor
c. NADase
d. X and V factor

139. Bacteria are highly susceptible to antibiotics during
a. Lag phase b. Log phase
c. Decline phase d. Stationary phase

140. Kitten test is used to diagnose
a. Bacillus b. Streptococci
c. Staphylococci d. Listeria

141. Cold enrichment is necessary for isolation of
a. Streptococci b. Staphylococci
c. Listeria d. Leptospira

142. Bacteria multiply by
a. Budding b. Binary fission
c. Mitosis d. Meiosis

143. Egg yolk agar is used to study the production of
a. Catalase b. Coagulase
c. Neuraminidase d. Lecithinase

144. Mouse neutralization test is used for diagnosis of
a. Anthrax
b. Brucellosis
c. Enterotoxaemia
d. Haemorrhagic septicaemia

145. Viruses grow in
a. Blood agar
b. Cell culture
c. Nutrient agar
d. Nutrient broth

146. Serotyping of *E. coli* is done based on the antigen from
a. Somatic b. Capsule
c. Flagella d. All of the above

147. The first step in viral replication is
a. Attachment
b. Uncoating
c. Replication of nucleic acid
d. Release

148. Ascolis test is performed in

a. Blood b. Serum
c. Hides and skin d. Urine

149. Tram track appearance is the characteristic feature of

a. Actinobacillosis b. Mycobacterium
c. Dermatophilus d. Corynebacterium

150. Fir tree growth in gelatin stab is produced by

a. B. anthracis
b. Cl. tetani
c. L. monocytogenes
d. P. vulgaris

151. *Bacillus anthracis* forms "medusa head" colonies in

a. Blood agar
b. Nutrient broth
c. Nutrient agar
d. Brilliant green agar

152. The polymerase enzyme functions as

a. Transcriptase
b. Replicase
c. Both a and b
d. None of the above

153. S19 vaccine is used in

a. Brucellosis b. Leptospirosis
c. Anthrax d. Q-fever

154. The process of killing all the microorganism is called

a. Disinfection b. Sanitation
c. Pasteurization d. Sterilization

155. Tetrathionate broth selectively favours the growth of

a. Escherichia b. Pseudomonas
c. Klebsiella d. Salmonella

156. Romanowsky stain is used to demonstrate

a. Haemobartonella b. Mycobacterium
c. Leptospira d. Trichophyton

157. Lateral bodies are present in the structures of

a. Vaccinia virus b. Cow pox virus
c. Variola virus d. All of the above

158. In bovine MHC is referred as

a. HLA b. BoLA
c. H-2 d. FoLA

159. Antigen binding site on antibody is called

a. Epitope b. Paratope
c. Fc fragment d. Fab

160. The interleukin responsible for class switching of IgM to IgG is

a. IL-1 b. IL-2
c. IL-4 d. IL-10

161. 'J' chain is present in

a. IgA and IgM b. IgM and IgE
c. IgG and IgM d. IgM and IgE

162. Medium used for the growth of mycoplasma is

a. PPLO Agar b. Frey's medium
c. Both a and b d. Thiol medium

163. Parvo virus multiplies only in the nuclei of

a. Resting cells b. Dividing cells
c. Both a and b d. None of the above

164. Teichoic acid present in the cell wall of

a. G^{+ve} bacteria b. G^{-ve} bacteria
c. Both a and b d. None of the above

165. Reagin or homocytotropic antibody or prausnitz-küstner antibody is

a. IgM b. IgE
c. IgA d. IgD

166. First immunoglobulin to be synthesized in neonates is

a. IgM b. IgG
c. IgA d. IgD

167. IgY is analogous to which Mammalian immunoglobulin

a. IgM b. IgG
c. IgA d. IgD

168. Self-assembling, extracellular system of proteins present in inactive form in plasma and body fluids is called as

a. C-reactive protein b. Fibrinogen
c. Complement d. Haptoglobulin

169. Protein specific for viral infection is

a. Interferon
b. Bence Jones protein
c. Heptoglobin
d. Chaperons

170. Primary binding test includes

a. RIA b. ELISA
c. IFA d. All of the above

171. Secondary binding test includes

a. HI b. AGID
c. CFT d. All of the above

172. For sero-diagnosis of Ranikhet disease, HI is performed at what HA units

a. 2 HA b. 4 HA
c. 8 HA d. 16 HA

173. Antigenic variation in avian influenza virus is largely due to

a. Genetic Shift
b. Genetic Drift
c. Segmented genome
d. None of the above

174. Presentation of tumor protein to cytotoxic T cells is done with the help of

a. MHC - I molecules
b. MHC - II molecules
c. MHC - III molecules
d. All of the above

175. Complement activation is predominantly mediated by

a. IgA b. IgG
c. IgD d. IgM

176. Classical pathway of complement is initiated by

a. Binding of Cl to antigen-antibody complexes
b. Microbes
c. Endotoxins
d. All of the above

177. Classical C3 convertase is

a. C4b2b3b b. C4b3b
c. C4bBb d. C4b2b

178. Classical C5 convertase is

a. C4b2b3b b. C4b3b
c. C4bBb d. C4b2b

179. C3 convertase of alternate pathway is

a. C4b2b3b b. C4b3b
c. C3bBb d. C4b2b

180. Primary Lymphoid organ is

a. Bone marrow
b. Thymus
c. Bursa
d. All of the above

181. Antigen-presenting cells are

a. Macrophages
b. Dendritic cells
c. B cells
d. All of the above

182. CD4 is expressed on

a. T helper cells
b. T cytotoxic cells
c. Both a and b
d. None of the above

183. T lymphocytes are responsible for

a. Cell-mediated immunity
b. Humoral immunity
c. Both a and b
d. None of the above

184. CD8 is expressed on

a. T helper cells
b. T cytotoxic cells
c. Both a and b
d. None of the above

185. CD4 molecules on Th cells bind to
a. CD 56 molecule
b. MHC I Molecules
c. MHC II molecules
d. None of the above

186. CD4/CD8 ratio about
a. 1:2 b. 2:1
c. 3:1 d. 1:3

187. After subcutaneous injection the antigen first carried to
a. Thymus b. Spleen
c. Local lymph nodes d. Bone marrow

188. Type-1 hypersensitivity reaction is mediated by
a. Ig G b. Ig E
c. Ig M d. Ig A

189. Main immunoglobulin protecting mucosal surface is
a. Ig M b. Ig A
c. Ig G d. All of the above

190. Most of the lymphocytes (60% -70%) present in blood are
a. Natural killer (NK) cells
b. T-Lymphocytes
c. B-Lymphocytes
d. None of the above

191. Monoclonal antibodies (MAB) was discovered by
a. Kohler and Milstein
b. S. Tonegawa
c. J. Michael Bishop and Harold Varmus
d. None of the above

192. Humoral immunity is mediated by
a. Neutrophil b. NK cells
c. B lymphocyte d. T lymphocyte

193. Natural killer (NK) cells are
a. Activated Macrophages
b. Lymphocytes
c. Basophils
d. Activated Neutrophils

194. Which statement is true about dendritic cells?
a. Located at the common sites of entry for microbes
b. Express receptors like TLR
c. Migrate preferentially to T cell zone of lymph nodes
d. All of the above

195. Which of the following is a potent immunogen?
a. Protein b. Fat
c. Carbohydrate d. Nucleic acid

196. Macrophages internalize antigens by
a. Phagocytosis
b. Endocytosis
c. Both of the above
d. None of the above

197. Lipids tend to be poor antigens because they are
a. Structurally instable
b. Relatively simple
c. Widely distributed
d. All of the above

198. The overall strength of antigen antibody attachment is known as
a. Avidity b. Atopy
c. Immunogenicity d. Tolerance

199. Portion of antigen interacting with MHC is called
a. Epitope b. Paratope
c. Agretope d. Immunogen

200. After intravenous injection the antigen first carried to
a. Thymus b. Spleen
c. Lymph nodes d. Bone marrow

201. Antigen processing and presentation can be prevented by
a. Formaldehyde treatment
b. Glutaraldehyde
c. Both of the above
d. None of the above

202. Macrophages are not efficient antigen presenting cells because

a. Needs activation to express MHC II and co-stimulatory molecule
b. Phagocytosed antigen destroyed by lysosomal proteases
c. Both of the above
d. None of the above

203. Most potent antigen presenting cell in processing naïve antigen is

a. Dendritic cells b. B cells
c. Macrophages d. T cells

204. Association of antigenic peptides with different MHC molecules is determined by

a. Mode of entry into the cell
b. Origin of the peptide
c. Site of processing
d. All of the above

205. Minimum molecular size for an antigen is

a. 1 kD b. 10 kD
c. 100 kD d. 1000kD

206. Virus which shares serological reactivity with human AIDS virus is

a. MCF virus b. EIA virus
c. IBR virus d. Bluetongue virus

207. Cytokines secreted by Th2 cells are

a. IL-4
b. IL-10
c. IL-5 and IL-6
d. All of the above

208. Most immunogenic viral polypeptide of FMD virus is

a. VP1 b. VP2
c. VP3 d. VP4

209. CD4/CD8 ratio is about

a. 1:2 b. 2:1
c. 3:1 d. 1:3

210. Cytokines secreted by Th1 cells are

a. IL-2 b. IFN-gamma
c. IL-1 d. Both a and b

211. Delayed type/Cell mediated hypersensitivity is

a. Type- I b. Type- II
c. Type- III d. Type- IV

212. Cytokines cause macrophages to fuse into large, multi-nucleated giant cells are

a. IFN γ b. IL-4
c. IL-1 d. Both A and B

213. Immune complex mediated hypersensitivity is

a. Type I Hypersensitivity
b. Type II Hypersensitivity
c. Type III Hypersensitivity
d. Type IV Hypersensitivity

214. Interferon-gamma is derived from

a. Activated B cell
b. Activated Th1 cell
c. Activated Th2 cell
d. All of the above

215. Cytokine which may trigger synthesis of acute-phase proteins is

a. IL-1
b. IL-6
c. TNF-alpha
d. All of the above

216. Bence Jones proteins are

a. Heavy chains of immunoglobulin
b. Lambda or kappa light chains of immunoglobulin
c. Fc portion of immunoglobulin
d. None of the above

217. Interleukin that suppresses the immune response is

a. IL-1 b. IL-2
c. IL-10 d. TNF

218. "Antinuclear factors" are observed in which immunological disorder

a. Sjogren's syndrome
b. Systemic Lupus Erythematosus
c. Rheumatoid arthritis
d. Erosive polyarthritis

219. The interleukin commonly referred as chemokine is

a. IL-1 b. IL-2
c. IL-8 d. IL-10

220. Endogenous antigen is expressed by

a. MHC I b. MHC II
c. MHC III d. All of the above

221. Tc cells recognize

a. Antigen alone
b. Antigen in association with MHC –I only
c. Antigen in association with MHC –II only
d. All of the above

222. Th cells recognize

a. Antigen alone
b. Antigen in association with MHC –I only
c. Antigen in association with MHC –II only
d. All of the above

223. T cells recognize Antigen through

a. BCR b. TCR alone
c. TCR-CD3 complex d. None of the above

224. The molecules responsible for recognition of antigen by immune system are

a. B cell receptor b. T cell receptor
c. MHC molecules d. All of the above

225. The antigen independent maturation of lymphoid cells occurs in

a. Primary lymphoid organ
b. Secondary lymphoid organ
c. Tertiary lymphoid organ
d. None of the above

226. The antigen dependent maturation of lymphoid cells occurs in

a. Primary lymphoid organ
b. Secondary lymphoid organ
c. Tertiary lymphoid organ
d. None of the above

227. Fc region of Ig G is formed by

a. Only heavy chain
b. Only light chain
c. Combination of heavy and light chain
d. None of the above

228. The Hinge region of Ig G is rich in

a. Arginine b. Proline and cystine
c. Methionine d. None of the above

229. The major surface receptor of Natural killer cell is

a. CD4 b. CD8
c. CD 56 d. None of the above

230. Immunoglobulin is the surface receptor of

a. B cell b. T cell
c. Both a and b d. None of the above

231. During secondary response, T-independent antigen continues to produce

a. IgA b. IgM
c. IgG d. IgD

232. Haptens have

a. Immunogenicity and reactivity
b. Immunogenicity but no reactivity
c. Reactivity but no immunogenicity
d. Neither immunogenicity nor reactivity

233. During allograft rejection blood group antigens trigger

a. Antibodies formation
b. T-Cell mediated rejection response
c. Both together
d. None of the above

234. An example for Type III hyper sensitivity is

a. Tuberculin reaction
b. Arthus reaction
c. Milk allergy
d. Molecular mimicry

235. Autoimmunity is mediated by

a. B cells
b. T cells
c. Either B or T cells
d. Neither B nor T cells

236. Immunoglobulin E is also called as

a. Cytophilic antibody
b. Macroglobulin
c. Reaginic antibody
d. Cytotrophic antibody

237. The immunoglobulin that do not have a hinge region are

a. IgA b. IgG
c. IgM d. IgD

238. Complement system was discovered by

a. E. Metchnikoff b. J. Bordet
c. K. Landsteiner d. L. Pasteur

239. The immunoglobulin found in highest concentration in serum

a. IgA b. IgG
c. IgM d. IgE

240. Father of immunogenetics is

a. Paul Ehrlich b. Metchnikoff
c. Louis Pasteur d. Susumu Tonegowa

241. IgA is a

a. Monomer b. Dimer
c. Polymer d. Pentamer

242. Immunity associated with recovery from a disease is termed as

a. Natural active immunity
b. Natural passive immunity
c. Artificial active immunity
d. Artificial passive immunity

243. Complement used in serological assays is usually derived from

a. Guinea pigs b. Horse
c. Rabbits d. Hamsters

244. Immunity that is important in intra cellular bacterial infection is

a. Humoral immunity
b. Mucosal immunity
c. Cell-mediated immunity
d. Non-specific immunity

245. Immuno-diagnostic procedures detect

a. Antigen
b. Antibodies
c. Both a and b
d. Antigen, hapten and antibodies

246. A serum containing specific antibodies in large amount that used in detecting antigens is

a. Hyperimmune serum
b. Agammaglobulin serum
c. Negative control serum
d. Foetal calf serum

247. Serum sickness is a hypersensitivity reaction of

a. Type I b. Type II
c. Type III d. Type IV

248. Long hinge region is characteristic of

a. IgA b. IgD
c. IgM d. IgE

249. The eventual product of complement system, which lyses the microbes, is

a. MHC b. TCR
c. MAC d. None of the above

250. Antigen binding site on immunoglobulin is called

a. Epitope b. Paratope
c. Fc fragment d. Fab

251. Portion of antigen involved in the binding of antibodies is called

a. Epitope b. Paratope
c. Agretope d. Immunogen

252. Largest immunoglobulin is

a. IgA b. IgG
c. IgD d. IgM

253. Which of the following antibody gives a primary immune reaction?

a. IgG b. IgM
c. IgA d. IgE

254. The specificity of an antibody is due to

a. Its valency
b. The heavy chains
c. The Fc portion of the molecule
d. The variable portion of the heavy and light chain

255. NK cells are

a. Type of tumorous cells
b. Type of lymphocytes
c. Type of neutrophils
d. Type of macrophages

256. A tissue graft or organ transplant from a donor of a different species from the recipient is called

a. Autograft b. Allograft
c. Heterograft d. Xenograft

257. Small molecules that elicit an immune response only when attached to a large carrier such as a protein are called

a. Haptens b. Immunogens
c. CRISPR d. Aptamers

258. Failure to mount an immune response to an antigen is called

a. Atopy
b. Allergy
c. Graft rejection
d. Immunological tolerance

259. How many types of lymphocytes are present in the body

a. 5 b. 2
c. 3 d. 4

260. TLRs play an important role in

a. Innate immunity b. Acquired immunity
c. Humoral immunity d. None of the above

261. Ligand for TLR5 is

a. Flagillin b. DNA
c. RNA d. Cell wall

262. Physical barrier of immune system includes

a. Skin
b. Mucous membrane
c. Epithelia/Endothelia
d. All of the above

263. Father of immunology is

a. Paul Ehrlich b. Metchnikoff
c. Louis Pasteur d. Edward Jenner

264. Which of the following best describes the innate immune system?

a. A targeted and highly specific response to a single pathogen or molecule
b. A generalized and nonspecific set of defenses against a class or group of pathogens
c. A set of barrier mechanisms that adapts to specific pathogens after repeated exposure
d. The production of antibody molecules against pathogens

265. Which of the following constantly sheds dead cells along with any microbes that may be attached to those cells?

a. Epidermis b. Dermis
c. Hypodermis d. Mucous membrane

266. Which of the following uses a particularly dense suite of tight junctions to prevent microbes from entering the underlying tissue?

a. The mucociliary escalator
b. The epidermis
c. The blood-brain barrier
d. The urethra

267. PAMPs on the pathogens are recognized by

a. DAMP b. PRRs
c. PRAA d. None of the above

268. Cellular defense include

a. Granulocytes b. Agranulocytes
c. Skin d. Both a and b

269. Predominant antibody during a typical secondary immune response is

a. IgG b. IgM
c. IgA d. IgE

270. B cell receptors are also known as

a. Immunoglobulins b. Antibodies
c. TCRs d. Both a and b

271. Ligand for TLR3 is

a. Flagillin
b. DNA
c. dsRNA
d. Cell wall

272. After vaccination which kind of immune response is elicited

a. Passive acquired b. Active acquired
c. Active innate d. Passive innate

273. Which antibody can cross the placenta?

a. IgA b. IgM
c. IgD d. IgG

274. MHC I is expressed by

a. Macrophages only
b. All nucleated cells
c. B lymphocytes only
d. Red blood cells

275. Both the CMI and humoral immune response is stimulated by

a. Helper T cells
b. Cytotoxic T cells
c. NK cells
d. None of the above

276. Scavengers of the body are

a. Monocytes b. Macrophages
c. T lymphocytes d. B cells

277. Immune cells recognizes self and foreign by

a. MHC on the surface
b. PAMP
c. PRRs
d. Both a and b

278. Current commercial vaccines for equine influenza contain the subtypes

a. H3N8
b. H7N7
c. Both a and b
d. None of the above

279. Antigenic shift in avian influenza viruses involves

a. Minor changes in sequences
b. Major segmental re-assortments
c. No changes occur in the genetic material
d. None of these

280. Edwards media is used in the isolation of

a. Staphylococci b. Leptospira
c. Bacillus d. Streptococci

281. Viruses are

a. Obligate parasites
b. Intracellular parasites
c. Both a and b
d. None of these

282. Dimorhpic Fungi are

a. Blastomyces b. Coccidioides
c. Histoplasma d. All of the above

283. Spheroplasts are

a. G-ve bacteria without cell wall
b. G-ve bacteria with partial cell wall
c. G-ve bacteria without cytoplasmic membrane
d. G-ve bacteria with partial cytoplasmic membrane

284. Concentration of serum in maintenance medium for tissue culture is

a. 1-2%
b. 5-10%
c. 10-20%
d. None of the above

285. A dye which is used in immunofluorescence

a. Lissamine rhodamine B
b. Cy3
c. None of these
d. Both of a and b

286. Sabouraud's dextrose agar is an example for

a. Enrichment medium
b. Fungal culture medium
c. Selective medium
d. None of the above

287. Tracheal ring culture is an example for

a. Cell line
b. Tissue culture
c. Maitland culture
d. Organ culture

288. The ability of serum to kill Gram negative bacteria is proportional to the amount of

a. Beta lysine
b. Antibody and complement
c. Blood cells
d. Fibrin

289. Capsule of virulent strains of *Bacillus anthracis* is made up of
a. Gamma glutamyl polypeptide
b. Hyaluronic acid
c. Polysacchaaride
d. Mycolic acid

290. Mancini test is
a. Single diffusion in one dimension
b. Single diffusion in two dimensions
c. Double diffusion in one dimension
d. Double diffusion in two dimensions

291. The level of incorporation of agar in culture medium is
a. 7.5% b. 2%
c. 5% d. 10%

292. The age of the embryo for performing chorioallantoic membrane route of inoculation is
a. 9-11 days
b. 5-7 days
c. 10-12 days
d. None of the above

293. Bacteria surrounded by flagella all over the surface is known as
a. Amphitrichous b. Peritrichous
c. Lophotrichous d. Atrichous

294. COFAL test is used in the diagnosis of
a. Bovine leukemia
b. Avian leukosis
c. Equine infectious anaemia
d. Human immunodeficiency virus

295. Example for Gram negative cocci
a. Staphylococcus aureus
b. Streptococcus pyogenes
c. Neisseria meningitides
d. Pasteurella multocida

296. Selective media for Listeria is
a. MCA
b. BGA
c. PALCAM
d. Chocolate agar

297. Drumstick shaped sporulating organism is
a. Clostridium tetani
b. Clostridium perfringens
c. Clostridium chauvoei
d. Clostridium botulinum

298. Pseudo hyphae are seen in
a. Aspergillus
b. Candida
c. Trychophyton
d. None of the above

299. Hemophilus influenza grows best on
a. Blood agar
b. BGA
c. Chocolate agar
d. Mac Conkey agar

300. Listeria are motile at
a. 25°C b. 37°C
c. 40°C d. 45°C

301. Mycobactin is required for the cultivation of
a. M. avium b. M. tuberculosis
c. M. johnei d. M. phlei

302. Fried egg appearance of colonies are seen in
a. Histoplasma b. Mycoplasma
c. Streptococci d. Pasturella

303. Selective media of Staphylococcus is
a. Blood agar
b. SS agar
c. Manitol salt agar
d. Stone brinks media

304. Laboratory cultivation of *Rhinosporidium seeberii* can be done in
a. Cornmeal agar
b. Sabouraud's dextrose agar
c. Potato agar
d. None of the above

305. Boener filter is an example of
a. Membrane filter
b. Asbestos filter
c. Porcelain filter
d. Earthenware filter

306. The quelling reaction is used for typing of

a. Staphylococcus b. Pasteurella
c. Pneumococcus d. None of the above

307. Zebra marking in large intestine of affected animals are seen in

a. FMD
b. Rinderpest
c. Bovine viral diarrhea
d. Swine fever

308. Optimum pH of the media to be used for cultivation of yeast is

a. 3.5-3.8 b. 9.5-9.8
c. 5.8-6.2 d. 7.4-7.8

309. + + - - of IMViC reaction is produced by

a. E. coli b. Enterobacter
c. Salmonella d. Klebsiella

310. Bipolar staining character is exhibited by

a. Burkholderia pseudomallei
b. Pasteurella multocida
c. Yersinia pestis
d. All of the above

311. Liquid paraffin is sterilized by

a. Autoclaving b. Filtration
c. Hot air oven d. UV irradiation

312. Yeast cell reproduce by

a. Binary fission b. Budding
c. Fragmentation d. Sporulation

313. In autoclave the steam used is

a. Super heated
b. Supersaturated
c. Steam under pressure
d. Supersaturated steam under pressure

314. Bomb blast growth in stab culture is seen in

a. Streptococci b. Staphylococci
c. Bacillus d. Listeria

315. Blood serum is sterilized by

a. Autoclave b. Hot air oven
c. Filtration d. Direct flaming

316. Capsular antigen is also called as

a. Vi antigen b. K antigen
c. H antigen d. F antigen

317. Bacterial growth rate is determined by

a. Lag phase b. Log phase
c. Stationary phase d. Decline phase

318. Bacterial cells become larger during

a. Lag phase b. Log phase
c. Stationary phase d. Decline phase

319. "String of pearls" on the nutrient agar colonies is produced by

a. B. anthracis b. Pneumococci
c. Proteus d. Salmonella

320. Oil is sterilized by

a. Incineration b. Hot air oven
c. Filtration d. Tyndalization

321. Cork screw motility is characteristic of

a. Listeria b. Leptospira
c. Proteus d. Campylobacter

322. *Proteus* and *Salmonella* are differentiated by

a. Catalase test b. Citrate test
c. Oxidase test d. Urease test

323. Seitz filter is

a. Asbestos filter
b. Glass filter
c. An earthen ware filter
d. Cellulose membrane filter

324. In growth phases of bacteria lag phase is

a. Initial stationary phase
b. Exponential phase
c. Phase of positive growth acceleration
d. Phase of accelerated death

325. Short thermal test is a modified

a. Mancini test
b. Tuberculin test
c. Oudin test
d. Oaklay Fulthrope test

326. Example of selective medium
a. Nutrient agar
b. Serum agar
c. Blood agar
d. Mac Conkey agar

327. The indicator used in sugar fermentation test
a. Methyl red
b. Andrade's indicator
c. Kovac's reagent
d. Neutral red

328. Standard proportion of serum in serum agar
a. 5% b. 10%
c. 15% d. 20%

329. *Fusobacterium necrophorum* is an example for
a. Aerobic spore former
b. Anaerobic nonspore former
c. Anaerobic spore former
d. Microaerophilic spore former

330. Cultivation method used to estimate viable count of bacteria
a. Streak plate method
b. Stroke culture method
c. Lawn culture method
d. Pour plate method

331. Selective media for the cultivation of *Haemophilus sp.* is
a. Sabouraud dextrose agar
b. Chocolate agar
c. Mannitol salt agar
d. Both a and b

332. Mycolic acid is present in the cell wall of
a. Mycobacterium tuberculosis
b. Rhodococcus equi
c. Arcanobacterium pyogenes
d. Both a and c

333. Bipolar morphology by Leishman staining is exhibited by-
a. Pasteurella multocida
b. Mannheimia heamolytica
c. Yersinia pestis
d. All of the above

334. Which of the following is/are dimorphic fungi-
a. Sporothrix schenckii
b. Histoplasma capsulatum
c. Aspergillus fumigatus
d. All of the above

335. Anton's test for Listeriosis detects
a. Haemolysin released by pathogen
b. Invasiveness of pathogen
c. Carrier state in animal
d. All of the above

336. Pathogenic and non-pathogenic staphylococci can be differentiated by
a. CAMP test b. Coagulase test
c. Nagler reaction d. Catalase test

337. Fungi grow best at pH
a. Alkaline b. Acidic
c. Neutral d. All of the above

338. Nagler reaction is exhibited by
a. B. anthracis b. Pneumococci
c. Proteus d. Clostridium

339. India ink is used for
a. Cell wall b. Capsule
c. Fats d. Mycolic acid

340. Test tube brush like growth in gelatin stab is observed in
a. Listeria spp.
b. Leptospira spp.
c. Proteus spp.
d. Erysipelothrix spp.

341. Wood's lamp is used for
a. Anthrax
b. Botulism
c. Enterotoxaemia
d. Dermatophytosis

342. A semisolid media used for isolation of Leptospira spp. is
a. Fletcher's media
b. Oxford media
c. Palcam agar
d. Edward media

343. Germ tube test is performed for
a. Candida albicans
b. Candida tropicalis
c. Candida pseudotropicalis
d. All of the above

344. Microabscesses in brain is caused by
a. Listeria spp.
b. Leptospira spp.
c. Proteus spp.
d. Erysipelothrix spp.

345. Vi antigen is characteristic of
a. Salmonella typhi
b. Salmonella dublin
c. Salmonella pullorum
d. Salmonella gallinarum

346. Stain used for live and dead count is
a. Geimsa b. Leishman
c. Toluene blue d. Trypan blue

347. Mycoplasma which does not require sterol for growth is
a. Mycoplasma gallicepticum
b. Acholeplasma spp.
c. Ureaplasma
d. All of the above

348. LCL bodies are seen in
a. Mycoplasmosis b. Parrot fever
c. Enteric fever d. Farmers lung

349. X and V factors are required for
a. Haemophilus spp.
b. Salmonella dublin
c. Salmonella pullorum
d. E. coli

350. Bacteria which can penetrate through intact skin is
a. Brucella spp. b. Anthrax spp.
c. Salmonella spp. d. Haemophilus spp.

351. Favus is caused by
a. Mycoplasma gallicepticum
b. Acholeplasma spp.
c. Trichophyton spp.
d. All of the above

352. Polymyxin is produced by
a. C. polymyxa b. B. polymyxa
c. B. subtilis d. Cl. perfringens

353. Glycerol favours the growth of
a. M. paratuberculosis b. M. tuberculosis
c. Mycoplasma d. M. leprae

354. Canine distemper is caused by
a. Lyssa virus b. Picornavirus
c. Morbillivirus d. Herpes virus

355. Glanders is caused by
a. Mycobacterium spp.
b. Burkholderia/Pseudomonas spp.
c. Staphylococcus spp.
d. Streptococcus spp.

356. Equine infectious anaemia is caused by
a. Lentivirus b. Flavivirus
c. Nairovirus d. Enterovirus

357. Reservoir host for rabies virus is
a. Rodents b. Dogs
c. Bats d. Humans

358. African horse sickness is caused by
a. Herpes virus b. Birna virus
c. Picorna virus d. Orbi virus

359. Presence of septic bacteria in the blood is known as
a. Toxaemia b. Septicaemia
c. Pyemia d. Cholemia

360. Proinflammatory mediators secreted by macrophages are
a. IL-1
b. IL-6 and IL-8
c. TNF
d. All of the above

361. Strongest chemotactic agents are
a. Complement C5a
b. Leukotrienes
c. Cytokine IL-8
d. Bacterial products

362. Cancer cells are

a. BHK b. Hela cells
c. Vero d. HL-8

363. Model virus for tumor research is

a. Adenovirus
b. Rous sarcoma virus
c. Shope papilloma virus
d. Polyoma virus

364. Wheelbarrow test is used for diagnosis of

a. African horse sickness
b. Equine infectious anaemia
c. Equine infectious encephalomyelitis
d. Jaagsiekte

365. Coggin's test is used for diagnosis of

a. African horse sickness
b. Equine infectious anaemia
c. Equine infectious encephalomyelitis
d. Jaagsiekte

Answer Sheet

1. a	2. b	3. c	4. c	5. a	6. c	7. b	8. d	9. c	10. c
11. d	12. c	13. d	14. d	15. a	16. b	17. b	18. d	19. c	20. a
21. b	22. c	23. b	24. a	25. c	26. a	27. a	28. a	29. a	30. b
31. a	32. d	33. b	34. c	35. a	36. c	37. b	38. c	39. c	40. a
41. a	42. d	43. d	44. b	45. a	46. a	47. b	48. c	49. b	50. d
51. d	52. d	53. d	54. b	55. a	56. c	57. d	58. a	59. c	60. c
61. a	62. b	63. a	64. d	65. a	66. c	67. c	68. c	69. d	70. a
71. a	72. c	73. c	74. c	75. c	76. d	77. d	78. d	79. b	80. a
81. a	82. d	83. a	84. a	85. d	86. c	87. c	88. a	89. d	90. c
91. a	92. d	93. d	94. c	95. b	96. b	97. d	98. a	99. c	100. b
101. a	102. d	103. a	104. c	105. c	106. c	107. c	108. d	109. d	110. a
111. c	112. d	113. c	114. a	115. a	116. c	117. d	118. a	119. b	120. b
121. a	122. c	123. c	124. d	125. a	126. c	127. d	128. b	129. d	130. d
131. a	132. d	133. d	134. c	135. d	136. c	137. b	138. d	139. b	140. c
141. c	142. b	143. d	144. c	145. b	146. d	147. a	148. c	149. c	150. b
151. c	152. c	153. a	154. d	155. d	156. a	157. d	158. b	159. b	160. c
161. a	162. c	163. b	164. a	165. b	166. a	167. b	168. c	169. a	170. d
171. d	172. b	173. a	174. a	175. d	176. a	177. d	178. a	179. c	180. d
181. d	182. a	183. a	184. b	185. c	186. b	187. c	188. b	189. b	190. b
191. a	192. c	193. b	194. d	195. a	196. c	197. d	198. a	199. c	200. b
201. c	202. c	203. a	204. d	205. a	206. b	207. d	208. a	209. b	210. d
211. d	212. d	213. c	214. b	215. d	216. b	217. c	218. b	219. c	220. a
221. b	222. c	223. c	224. a	225. b	226. a	227. c	228. b	229. c	230. b
231. c	232. c	233. a	234. b	235. c	236. c	237. c	238. b	239. b	240. d
241. b	242. a	243. a	244. c	245. c	246. a	247. c	248. b	249. c	250. d
251. a	252. d	253. b	254. d	255. b	256. d	257. a	258. d	259. c	260. a
261. a	262. d	263. d	264. b	265. a	266. c	267. b	268. d	269. a	270. d
271. c	272. b	273. d	274. b	275. a	276. b	277. a	278. c	279. b	280. d
281. c	282. d	283. b	284. a	285. d	286. b	287. d	288. a	289. a	290. b
291. b	292. c	293. b	294. b	295. c	296. c	297. a	298. b	299. c	300. a
301. c	302. b	303. c	304.b	305. b	306. c	307. b	308. c	309. a	310. d
311. c	312. b	313. d	314. d	315. c	316. b	317. b	318. a	319. a	320. b
321. d	322. d	323. a	324. a	325. b	326. d	327. b	328. b	329. b	330. d
331. b	332. d	333. d	334. d	335. d	336. b	337. b	338. d	339. b	340. d
341. d	342. a	343. a	344. a	345. a	346. d	347. b	348. b	349. a	350. a
351. c	352. b	353. b	354. c	355. b	356. a	357. c	358. d	359. b	360. d
361. d	362. b	363. d	364. d	365. b					

Unit – 5

Veterinary Public Health

Classification of Zoonoses

1. Classification on the basis of etiological agent

A. Bacterial Zoonosis: Brucellosis, leptospirosis, listeriosis, tuberculosis

B. Viral Zoonosis: Rabies, JE, KFD, Dengue, Yellow fever

C. Rickettsial and Chlamydial Zoonosis: Scrub typhus, Rocky Mountain Spotted Fever, Ornithosis/Parrot fever

D. Mycotic / Fungal: Dermatophytosis, Cryptococcosis, Histoplasmosis, Mucormycosis

E. Parasitic:

1. **Protozoan: Toxoplasmosis,** Babesiosis, Leishmaniasis, Trypanosomiasis, Giardiasis
2. **Trematode/ Fluke:** Fascioliasis, Amphistomiasis, Schistosomiasis
3. **Cestodes/ Tapeworms:** Cysticercosis, Hydatidosis, Coenuriasis, Taeniasis
4. **Nematodes/ Round worms:** Trichinellosis, Cutaneous Larva Migrans, Visceral Larva Migrans, Thelaziasis

2. Classification based on transmission cycle

A. Direct zoonoses (Orthozoonoses)

- Zoonotic diseases are perpetuated in nature by a single vertebrate species
- Transmission: Direct or indirect contact
- Infection is transmitted by direct contact : Anthrax
- Indirectly transmission through food (Taeniasis) and air (tuberculosis)

» If a vector is involved in the transmission, there is no development of pathogen in the vector (mechanical transmission)
Ex: Anthrax, Rabies, Tuberculosis, Brucellosis

B. Cyclozoonoses

» Zoonotic diseases require two or more vertebrate hosts to complete transmission cycle of an infectious agent. Subdivided into 2 subtypes

1. Obligatory cyclozoonoses (Euzoonoses): Human is must for completion of life cycle. Ex. Taenia solium, Taenia saginata

2. Non-Obligatory cyclozoonoses: Human is accidentally involved in completion of life cycle. Ex. Hydatidosis (*Echinococcus granulosus*), Toxoplasmosis

C. Metazoonoses (Pherozoonoses)

» Both vertebrate and invertebrate species are involved in the transmission of an infectious agent
» In invertebrate hosts, infectious agent may multiply, develop or remain dormant
» Metazoonoses is further subdivided into 4 subtypes

1.Metazoonoses type I: One vertebrate and one invertebrate host.
Ex: Yellow fever, plague

2.Metazoonoses type II: One vertebrate and two invertebrate host.
Ex: Paragonimiasis.

3.Metazoonoses type III: Two vertebrate and one invertebrate host.
Ex: Clonorchiasis, Eastern Equine Encephalitis

4.Metazoonoses type IV: Transovarian transmission is involved
Ex: Tick borne encephalitis (TBE)

D. Saprozoonoses

» Zoonotic diseases requires a non-animate substance i.e. food, soil, clothing, water, grass or plants for completion of life cycle in addition to vertebrate or invertebrate host.
» An infectious agent may multiply, develop or propogate in an inanimate site
» Saprozoonoses is further subdivided in 3 subtypes

1. **Saproanthropozoonoses:** These diseases of animals are transmitted to human beings via non- animate substance.
Ex. Cutaneous larva migrans, Ancylostomiasis.

2. **Saproamphixenoses:** These diseases are equally shared in nature by man and animals but are transmitted through inanimate objects.
   Ex. Histoplasmosis, fungal infections

3. **Saprometanthropozoonoses:** These diseases require vertebrate host, invertebrate host and inanimate object for completion of transmission cycle.
   Ex. Fascioliasis.

3. Classification based on reservoir hosts

A. Anthropozoonoses: These are diseases of domestic and wild animals which occur in nature independent of humans. Human beings get infected from animals in unusual circumstances, through occupational contact or food.
Ex.: Leptospirosis, tularemia, Rift valley fever, hydatidosis, rabies

B. Zooanthroponoses: These are diseases which normally pass from man to other vertebrate animals.
Ex.: Tuberculosis, amoebiasis, diptheria

C. Amphixenoses: These are ubiquitous diseases for which man as well as vertebrate animals act as host. The agent can pass from man to animal and animal to man.
Ex.: Streptococcosis, non-host specific salmonellosis, staphylococcosis

Transmission Cycles in Zoonosis

A. Sylvatic cycle: In this the organism propagates among wild animals. Hunters and forest rangers or domestic animals are commonly affected.
Ex.: Kyasanur forest disease, Monkey pox

B. Synanthropic cycle: The pathogens occur and propagate in domestic animals via synanthropic animals like rodents, birds and lizards. Man is often exposed to zoonotic diseases propagating in the synanthropic cycle.
Ex: Plague, Tularemia

C. Human cycle: Man to man cycle and can also pass from man to animals. Ex: Human tuberculosis

Important Viral Zoonotic Diseases

Virus	Source	Wildlife source	Host/reservoir
Rabies	Saliva, CNS	Fox, raccoons, bats and game animals	All mammals
Influenza	Aerosols, feces (birds)	Water bird, ducks	Mammals, poultry

MERS	Nasal and eye discharge	-	Dromedaries
CCHF	Blood, ticks, tissue	Rodents	Domestic ruminants
RVF (Rift valley fever)	Blood, liver, spleen, midges, mosquitoes	Buffalo, spring buck	Lamb, goat, bovine calves, dromedary
SARS	Respiratory droplets	Bats, palm civets	Mammals
Hantavirus	Rodent aerosols, excreta	Rodents, cats, foxes, coyotes	Rodents
WNV	CNS, spinal cord, kidney	Birds, midges	Horse (end host)
Marburg/Ebola	Reuse of unsterile needles and syringes	Green monkey, bats	Human
Yellow fever	Mosquito	Monkey	Monkey, human

Important Bacterial Zoonotic Diseases

Bacteria	Source	Wildlife source	Host/reservoir
Tuberculosis	Aerosols	Deer	All mammals
Brucellosis	Milk, congenital, lymph nodes	Bison, Deer	Ruminants, camels, horse
Anthrax	Animal blood, spores in soil, Skin and Hides	Wild Mammals	Mammals
Ornithosis/ Chlamydiosis	Aerosols	Psittacine, falcon, pigeon, other birds	Mammals, sheep, goat, birds
Q-fever	Aerosols, raw milk	Rats, pigeon	Cattle, goat, camel
Glanders	Nasal discharge, skin ulcers	Zebra	Equines
Salmonellosis	Feces, blood, tissue, eggs	Pigeons, birds	Poultry, Mammals
Tularemia	Mosquito, ticks, aerosol, water	Rodent, hare, rabbit	Sheep
Plague	Ingestion of poorly cooked food	Rodents, rabbit, rats	Sheep, goat, cattle, camel, horse, dog
Campylobacteriosis	Chicken meat	Wild birds	Chicken, cattle, sheep

Important Parasitic Zoonotic Diseases

Disease	Parasite	Intermediate Hosts/Vector	Definitive Hosts	Mode of Transmission to Humans
Chagas disease	*Trypanosoma cruzi*	Triatomine bugs	Humans, wild/domestic animals	Feces from bug in bite wound
Chinese liver fluke	*Clonorchis sinensis*	Snail, freshwater fish	Mammals	Consumption of undercooked fish
Hydatidosis	*Echinococcus granulosus*	Sheep, goats, swine, cattle	Dogs, canids	Ingestion of eggs from dog feces
Fascioliasis	*Fasciola sp.*	Snails	Humans, sheep, cattle	Ingestion of encysted larvae on water plants
Fish tapeworm	*Diphyllobothrium latum*	Freshwater fish	Mammals	Consumption of undercooked fish
Dwarf Tapeworm	*Hymenolepis nana*	Beetles, fleas	Humans, rodents	Ingestion of eggs or intermediate hosts
Leishmaniasis	*Leishmania spp.*	Sand flies	Dogs, rodents, humans	Bite of a sand fly
Schistosomiasis	*Schistosoma mansoni, Schistosoma haematobium, Schistosoma mekongi, Schistosoma japonicum*	Freshwater snails	Humans, rodents, baboons, monkeys, dogs, cattle, swine, cats, horses, goats	Contact with water
Taeniasis (cysticercosis)	*Taenia saginata, Taenia solium*	Cattle, Pig	Humans	Consumption of undercooked pork or beef
Trichinellosis	*Trichinella spiralis*	Carnivores and omnivores	Carnivores and omnivores	Consumption of undercooked meat

Different Methods of Pasteurization

1. **Low-temperature hold method (LTH):** In this milk is heated at 63°C/145°F **for 30 min** before cooling it down to 7°C. This lower temperature longer-time process causes greater changes to flavour and loss of vitamins than HTST.

2. **High-temperature short-time (HTST):** In this milk is heated at **72°C/161°F for 15 seconds** before cooling it down to 7°C. It helps in retention of nutritional and sensory quality. HTST method is also called as Flash pasteurization.

3. **Ultrahigh-temperature (UHT):** In this milk is heated at 138°C for at least 2 seconds. In UHT method extreme pasteurization kills all microorganisms.

» Estimation of pasteurization efficiency: **Phosphatase activity test** is simple test for milk pasteurization. If phosphatase activity is found, it is assumed that the heat treatment was inadequate to destroy the pathogenic bacteria or unpasteurized milk has contaminated the pasteurized product.

Multiple Choice Questions

1. Zooanthroponoses are transmitted from
a. Man to animal
b. Animal to man
c. Between man and animal
d. None of the above

2. Vector which is associated with the transmission of Japanese B encephalitis virus to swine is
a. *Culex tritaeniorrhynchus*
b. *Culex aegypti*
c. *Culex cedecei*
d. *Culex delpontei*

3. Veterinarian involved in BCG vaccine development
a. Griffith Evans b. Gaston Ramon
c. Guerin d. None of the above

4. Titratable acidity of milk is
a. Natural acidity
b. Developed acidity
c. Natural and developed acidity
d. None of the above

5. Iron bacteria that clogs iron pipes is
a. Citrobacter
b. *S. fecalis*
c. Gallionella
d. None of the above

6. The test recommended for detection of dehydrogenase activity of bacteria in milk
a. MBRT b. ABRT
c. STERILITY test d. COB test

7. Casoni's test is associated with
a. Yellow fever b. Hydatid disease
c. Undulant fever d. Anthrax

8. Zoonoses due to transplantation of organ from animals is known as
a. Organo zoonoses
b. Xenozoonoses
c. Amphixenosis
d. Transplantozoonoses

9. The indicator bacteria for recent faecal pollution of water is
a. Clostridium b. Escherichia
c. Streptococci d. Staphylococci

10. Yellow fever is classified as
a. Type I metazoonoses
b. Obligatory cyclozoonoses
c. Type II metazoonoses
d. Non obligatory cyclozoonoses

11. Kysanur forest disease is classified as
a. Metazoonoses
b. Sparozoonoses
c. Cyclozoonoses
d. None of the above

12. Cold sterilization in milk industry is associated with
a. Lactanins b. Lactoferrins
c. Lactoperoxidase d. Lysozyme

13. Milk borne haver hill fever is caused by
a. Brucella b. Listeria
c. Yersinia d. Streptobacillus

14. Kitten test is done to diagnose food poisoning due to
a. Coagulase
b. Enterotoxin
c. Erythrogenic toxin
d. Exotoxin

15. Lactoferrin content is high in the milk of
a. Cow b. Buffalo
c. Human d. None of the above

16. In RRT on milk, Resazurin dye is reduced to
a. Formazan b. Tetrazolium
c. Resorufin d. Leucoform

17. In man immunoglobulin concentration in colostrum is
a. 50 mg/ml b. 500 mg/ml
c. 150 mg/ml d. 100 mg/ml

18. The organism responsible for Bitty cream in milk is

a. Alkaligenes viscolactis
b. Streptococcus cremoxis
c. Bacillus cereus
d. Enterobacter aerogenes

19. The antimicrobial enzyme abundant in cow milk but absent in human milk is

a. Lactoperoxidase b. Lactanin
c. Lipase d. Lysozyme

20. The antimicrobial factor abundant in human milk but absent in cow milk is

a. Lactoperoxidase b. Lactanin
c. Bifidous factor d. Lysozyme

21. FAO is located at

a. Geneva b. France
c. Paris d. Rome

22. Turbidity test is used to test

a. UHT milk b. Boiled milk
c. Sterilized milk d. All of the above

23. Adulteration of milk with water can be detected by

a. Specific gravity b. Freezing point
c. Nitrates d. All of the above

24. Freezing point of meat is

a. 1 to 1.5°C b. -2 to -2.5°C
c. -1 to -1.5°C d. 0.5 to 1.5°C

25. Hay Odour in egg is produced by

a. Pseudomonas
b. Enterobacter cloacae
c. Nitrobacter
d. Proteus vulgaris

26. Ultimate pH of meat is

a. 4.7-5.0 b. 5.1-5.3
c. 5.4-5.7 d. 6.8-7.0

27. The act of killing for food in jewish slaughter is called

a. Jhatka b. Schechita
c. Kosher d. Halal

28. Blue spots in meat are due to

a. Clostridium sporogenes
b. Cladosporium herbarum
c. Pseudomonas syncyanea
d. Pseudomonas fragi

29. The pH falls to ..... in PSE condition

a. 6.5-6.8 b. 5.4-5.5
c. 7.0-7.2 d. 6.8-7.0

30. The stunning method in which the bleeding efficiency is more

a. Electrical stunning
b. Water jet stunning
c. Carbon dioxide method of stunning
d. Stunning with captive bolt pistol

31. Rigor mortis of the carcass is dependent only on the availability of

a. ADP b. ATP
c. AMP d. NADP

32. The mould which causes white spot on meat is

a. Cladosporium herbarum
b. Cladosporium butryi
c. Sporotrichum species
d. Aspergillus flavus

33. White side test is used to detect

a. Mastitis
b. Starch in milk
c. Animal fat in ghee
d. None of the above

34. The meat considered fit for consumption of Jews is called

a. Terefa
b. Shochet
c. Chalef
d. Kosher

35. Paragonimiosis belong to the ..... class of zoonoses

a. Metazoonoses subtype I
b. Metazoonoses subtype II
c. Metzoonoses subtype III
d. Metazoonoses subtype IV

36. OIE is located at

a. Geneva b. France
c. Paris d. Rome

37. Kanagawa test is used in the identification of

a. Brucellosis b. Typhoid
c. Vibriosis d. Listeriosis

38. Chlorine demand of water is measured by

a. Chlorinometer
b. Horrock's Apparatus
c. Hygrometer
d. Salinometer

39. The process of enrichment of lakes is called

a. Organic supplementation
b. Eutrophication
c. Biological supplementation
d. Zootrophication

40. The heart of the slow sand filter is

a. Eutrophic layer b. Phytogleal layer
c. Filtered layer d. Zoogleal layer

41. Anisakiasis is a

a. Fish borne zoonosis
b. Vector borne zoonosis
c. Saprozoonosis
d. All of the above

42. Giardiasis is an example of

a. Anthropozoonosis b. Zooanthroponosis
c. Amphixenosis d. All of the above

43. Milk ring test is done to detect

a. Mastitis b. Brucellosis
c. Q-fever d. All of the above

44. The rate of filtration of rapid sand filter is

a. 0.1-0.4 m^3 /m^2/hr
b. 0.5-5.0 m^3 /m^2/hr
c. 2-10 m^3 /m^2/hr
d. 5-15 m^3 /m^2/hr

45. Permutit is a complex of sodium with

a. Al and silicates
b. Al and carbonates
c. Mg and silicates
d. Mg and carbonates

46. Slow sand filter is cleaned by

a. Scrubing b. Spraying
c. Scraping d. Backwashing

47. Disease due to inhalation of coal dust

a. Asbestosis
b. Baggassosis
c. Black lung disease
d. Byssinosis

48. Percentage of available chlorine in Bleaching powder is

a. 23 % b. 30 %
c. 33 % d. 50 %

49. The psychoacoustic index of loudness is

a. Hertz b. Decibel
c. Phon d. Octaves

50. Chickungunya fever is a metazoonosis caused by

a. Alphavirus b. Flavivrus
c. Orbivirus d. Bunyavirus

51. Example of a water washed disease

a. Japanese encephalitis
b. Scabies
c. Dengue
d. Yellow fever

52. In human, exposure to ..... noise is not permissible

a. 85 dB b. 60 dB
c. 115 dB d. 20 dB

53. Athlete's foot is contracted from swimming pool on exposure to

a. Trichophyton
b. Schistosoma
c. Cryptosporidium
d. High dose of chlorine

54. Waste water which do not contain human excreta is called

a. Sewage b. Shud
c. Sullage d. Smut

55. Hard water has a pH of

a. Less than 5
b. More than 8
c. Neutral
d. Less than 4.5

56. In the atmosphere ozone level is thickest at

a. Equator
b. North pole
c. South pole
d. Equal in all areas

57. Smoke index is expressed as

a. Phon
b. Coh
c. Decibel
d. Hertz

58. The definitive host of *Taenia saginata* is

a. Sheep
b. Pig
c. Man
d. Cattle

59. Montenegro test is a skin test for distinguishing immune and non immune persons to

a. Brucella
b. Anthrax
c. Leishmaniasis
d. TB

60. Circling disease in sheep is caused by

a. Leptospira canicola
b. Listeria monocytogenes
c. Yersenia pestis
d. Brucella ovis

61. Epidemic of disease in bird population is referred to as

a. Epizootic
b. Enzootic
c. Epornithic
d. Ornithic

62. Break bone fever is a synonym of

a. JE
b. Dengue
c. Plague
d. All of the above

63. Sterne's vaccine for anthrax in human is

a. Live attenuated spore vaccine
b. Formalin killed vaccine
c. Avirulent live spore vaccine
d. Toxoid

64. The host for measles virus is

a. Man
b. Gibbon
c. Cat
d. Both a and b

65. Influenza H1N1 infection of was first reported in

a. India
b. Mexico
c. Ireland
d. England

66. Watery pork is due to

a. Decreased muscle pH
b. Increased pH
c. Swine fever
d. Swine influenza

67. Luoto capillary agglutination milk test is used for the diagnosis of

a. Brucellosis
b. Tuberculosis
c. Q fever
d. Psittacosis

68. Bone taint is

a. Bone cancer
b. Superficial spoilage
c. Deep seated spoilage
d. Bone TB

69. Nephelometer is used to measure

a. Turbidity of water
b. Flavor of water
c. Color of water
d. Bacterial count in water

70. Post pasteurized milk's quality is tested by

a. Catalase test
b. Phosphatase test
c. Methylene blue test
d. Oxidase test

71. The preferred method for bleeding of pig is

a. Bilateral severance
b. Prone sticking
c. Severing the brachiocephalic trunk and anterior vena cava
d. Thoracic inlet bleeding

72. The test employed to detect the developed acidity of milk is

a. Clot on boiling test
b. Resazurin test
c. Sediment test
d. Methylene blue reduction test

73. In mastitic milk there is an increased concentration of

a. Potassium
b. Sodium
c. Calcium
d. Phosphorous

74. The milk borne zoonoses diseases are

a. Tuberculosis
b. Brucellosis
c. Tick-borne encephalitis (TBE)
d. All of the above

75. Pre-slaughter CO_2 anesthesia is done for

a. Pigs b. Cattle
c. Poultry d. Goat

76. Human milk borne Crohn's disease is caused by

a. M. Avium
b. M. paratuberculosis
c. M. tuberculosis
d. M. bovis

77. Time temperature combination of HTST milk

a. 71.7°C for 15 sec
b. 71.7°C for 15 min
c. 68°C for 15 sec
d. 68°C for 15 min

78. The one which is not used for abnormal milk test is

a. Hotis test
b. CAMP test
c. Sodium lauryl sulphate test
d. Resazurin reduction test

79. The best method of medical waste disposal is

a. Dumping b. Burial
c. Incineration d. Composting

80. The inherent antimicrobial factor that maintains acidity in human stool is

a. Bifidobacterium bifidus
b. Lactobacillus acidophilus
c. L. bulgaricus
d. L. casei

81. Grading marking and deciding quality of butter and ghee is done by

a. BIS b. AGMARK
c. PFA d. MMPO

82. Cabbagy flavour of milk is associated with

a. UHT
b. Streptococcus lactis
c. Pseudomonas fragi
d. Silage feeding

83. Color of casein is mainly due to

a. Riboflavin b. Carotene
c. Lactochrome d. Pantothenic acid

84. Type of immunoglobulin predominantly found in milk is

a. IgA b. IgG
c. IgM d. IgE

85. Animal parasite infective to men known to be excreted through milk

a. Toxoplasma gondi b. T. saginata
c. T. solium d. All of the above

86. Tuberculin test is

a. Precipitation test
b. Agglutination test
c. Hypersensitivity reaction test
d. None of the above

87. Rabies is classified under

a. Direct zoonosis
b. Metazoonosis
c. Cyclozoonosis
d. Saprozoonosis

88. NEERI is located at

a. New Delhi b. Mumbai
c. Nagpur d. Kochi

89. The remote faecal pollution of water is accounted by the presence of

a. E. coli
b. Faecal streptococci
c. Clostridium
d. All of the above

90. The biological oxidation demand of water is more in the presence of

a. Enteric pathogen
b. Hepatitis virus
c. Faecal contamination
d. More organic matter

91. The point at which free chlorine begins to appear is known as

a. Chlorine point b. Break point
c. Low point d. All of the above

92. The rickettsial organism which causes trench fever in man is

a. R. conorii b. R. quintana
c. R. akari d. R. canada

93. Transovarial transmission of *Chlamidia psittaci* occurs in

a. Chicken b. Turkey
c. Duck d. Pigeon

94. Dehydrogenase activity of bacteria in milk is tested by

a. MBRT b. ABRT
c. Sterility test d. RBPT

95. Farmer's lung is caused by

a. Silica b. Asbestos
c. Hay or grain dust d. Asbestos

96. The test used to distinguish icteric change in meat from its normal yellow color

a. Acid malachite green test
b. Remington and Fourier test
c. Vandenberg test
d. Fouchets reagent

97. Minimum period of rest given to animals at lairage is

a. 3 hrs b. 4 hrs
c. 6 hrs d. 24 hrs

98. Electrical stimulation reduces

a. Cold shortening
b. Bone taint
c. Freezer burn
d. None of the above

99. Nitrazene yellow test on meat is to measure

a. Bleeding efficiency
b. pH
c. Sodium chloride
d. Time of death

100. Which species is acting as mixing vessel for influenza viruses?

a. Swine b. Ovine
c. Chicken d. Equine

101. Which species is resistant to leptospirosis?

a. Swine b. Ovine
c. Chicken d. Equine

102. The microflora survive at 55-70°C are known as

a. Mesophilic b. Thermoduric
c. Thermophilic d. Psychrophilic

103. Ropiness of milk is caused by

a. E. coli
b. Cl. butyricum
c. Bacillus cereus
d. Alcaligens viscolactis

104. Which is not a zoonotic disease?

a. Cow pox b. Pseudo cow pox
c. Sheep pox d. Monkey pox

105. For the soft scalding of poultry, the temperature of scalding tank water is

a. 50-51°C b. 53-55°C
c. 55-60°C d. 56-58°C

106. Mosquito borne zoonotic diseases are

a. J.E., Typhoid, Q-fever
b. Yellow fever, J.E., Dengue
c. Plague, Kala azar, KFD
d. T.B., Brucellosis, Salmonellosis

107. Anti-rabies vaccine should be stored at between

a. -5°C to 20°C
b. 2°C to 8°C
c. 25°C to 30°C
d. 20°C to 30°C

108. Muscle shortening incidence in meat can be reduced by
a. Chilling
b. Freezing
c. Stunning
d. Pithing

109. If milk is adulterated with water, the boiling point of milk
a. Increases
b. Decreases
c. Remains constant
d. None of the above

110. Colostrum is rich source of
a. Water
b. Maltose
c. Immunoglobins
d. Amino acids

111. The most effective control of a vector borne disease is
a. Treatment of infected humans
b. Treatment of infected wild animals
c. Elimination of the vector
d. Avoidance of endemic areas

112. MBRT is conducted on
a. Pasteurised milk
b. Sterilised milk
c. Raw milk
d. Condensed milk

113. The rabies may be confirmed by
a. Gram stain
b. Direct fluorescent-antibody test
c. Patient's symptoms
d. Passive agglutination

114. A vaccine is available for all of the following except
a. Haemophilus meningitis
b. Neisseria meningitis
c. Rabies
d. Botulism

115. Disease which cannot be transmitted to humans by pigeons is
a. Salmonellosis
b. Listeriosis
c. Yersiniosis
d. Brucellosis

116. The reservoir animal for Relapsing fever is
a. Cattle
b. Cat
c. Rodent
d. Snake

117. Tick borne encephalitis is caused by
a. Flavivirus
b. Alphavirus
c. Streptococcus
d. Listeria

118. The reservoir animal for Trichinellosis is
a. Only pig
b. Pig and rodents
c. All mammals
d. Mammals and fishes

119. Elephantiasis caused by *Wuchereria bancrofti* is
a. Zooanthroponosis
b. Anthropozoonosis
c. Metazoonosis
d. Not a zoonotic disease

120. O-toluedine test is used to detect
a. Chlorine in water
b. Flourine in water
c. Iodine in water
d. None of the above

121. Metazoonosis requiring two vertebrate and one invertebrate hosts is known as
a. Yellow fever
b. Clonorchiasis
c. Paragonimiasis
d. Rabies

122. Obligatory cyclozoonosis is
a. Hydatidosis
b. Cysticercosis
c. Rabies
d. Salmonellosis

123. Scarlet fever is caused by consumption of infected milk due to
a. Exfoliative toxin
b. Erythrogenic toxin
c. Enterotoxin
d. None of the above

124. Boiling test on meat detects
a. Colour
b. Odour
c. P^H
d. Flavour

125. Casual reading requires an illumination of

a. 25 Lux b. 100 Lux
c. 750 Lux d. 220 Lux

126. Stunning is prohibited in

a. Halal method
b. Jewish method
c. Jataka method
d. Muslim method

127. The disease known as Rag picker's disease is

a. Anthrax
b. Tuberculosis
c. Echynococcosis
d. Cutaneous larval migrans

128. Important aflatoxin involved in the intoxication of milk is

a. B1 and B2
b. G1 and G2
c. B1 and G1
d. All of the above

129. Bacteria that produces black colour in milk

a. Micrococcus roseus
b. Pseudomonas nigrificans
c. Serratia marcescens
d. Staphylococcus aureus

130. Botulism poisoning is common after consumption of

a. Raw milk
b. Boiled milk
c. Canned milk products
d. Sour milk

131. Leptospira organisms are shed in the milk of

a. Cow and goat
b. Man
c. Man, cow and goat
d. None of the above

132. Brucella antibodies in milk are tested by

a. RRT b. MBRT
c. ABRT d. All of the above

133. The most common method of pasteurization of bulk milk is

a. Batch b. LIST
c. HTST d. Vat type

134. Coliforms will cause ..... of milk

a. Homo-fermentation
b. Lacto-fermentation
c. Gas fermentation
d. Hetero-fermentation

135. Whiskers in meat is caused by

a. Bacteria b. Moulds
c. Protozoa d. Yeast

136. Food intoxication is produced by

a. Staphylococcus b. Salmonella
c. Rota viruses d. Toxoplasma

137. If milk is stored at 40°C, there is more chance of getting infection with

a. Acromonas b. Plesiomonas
c. Listeria d. Campylobacter

138. Milk stones contain

a. Milk solids b. Detergents
c. Milk fat d. All of the above

139. Electrical stimulation reduces

a. Cold shortening
b. Freezer burn
c. Bone taint
d. None of the above

140. Rickettsial disease transmitted to abattoir workers by aerosol

a. Psittacosis b. Scrub typhus
c. Deer fly fever d. Q fever

141. Torrymeter is used on meat to detect

a. Spoilage b. Toughness
c. Bloom d. Juciness

142. Phosphorescence in meat indicates contact of meat with

a. Detergent b. Bile pigment
c. Fish d. Radiation

143. Iodine value of the fat is highest in

a. Cattle b. Buffalo
c. Horse d. Pig

144. 'Freezer burn' is a condition usually seen in

a. Hip muscles
b. Shoulder muscles
c. Offals
d. Brain

145. According to BIS, pasteurized milk should not have a SPC/ml more than

a. 10,000 b. 20,000
c. 30,000 d. 50,000

146. Resazurin test (RRT) is suitable for

a. Boiled milk b. Raw milk
c. Pasteurised milk d. Sterilised milk

147. Streptococcal B haemolytic organisms are responsible for

a. Diphtheria
b. Malta fever
c. Scarlet fever
d. None of the above

148. *Escherichia coli* ferments sugar and produce

a. Only acid
b. Only gas
c. Both a and b
d. None of the above

149. In sewage treatment process zoogleal layer is found in

a. Grit chamber
b. Trickling filters
c. Activated sludge process
d. Sludge digestion tank

150. Siderosis is caused by

a. Coal dust b. Silica
c. Asbestos d. Iron

151. Psychrophillic count in milk is done at

a. 7°C for 10 days b. 37°C-24 h
c. 5°C-24 h d. 30°C-24 h

152. Media used for the estimation of *Escherichia coli* in milk

a. EMB agar
b. EMB broth
c. MacConkey broth
d. MacConkey agar

153. Nitrazine yellow test on meat is performed for measuring

a. pH
b. Bleeding efficiency
c. Sodium chloride content
d. Spoilage

154. Sling psychrometer is used to measure

a. Humidity
b. Wind direction
c. Atmospheric pressure
d. Wind speed

155. Drip is associated with

a. Curing b. Chilled meat
c. Frozen meat d. E. coli

156. Mesophiles grow at a temperature

a. 0°C-20°C b. 25°C-40°C
c. 25°C-60°C d. 30°C-47°C

157. Yellow fat disease in pigs is due to

a. Jaundice b. Salmonellosis
c. Improper sticking d. Fish diet

158. *Cladosporium herbarum* causes in meat

a. White spots b. Black beef
c. Black spots d. Green spot

159. Rancidity of meat may be due to hydrolysis or oxidation of fat by

a. H_2O_2 and Ozone
b. Light, O_2 and bacteria
c. Both a and b
d. Yeast and mould

160. The drawback of ozone while disinfecting water is

a. No residual effect
b. No bactericidal effect
c. No virucidal effect
d. No oxidizing effect

161. 'TORCH' test is associated with

a. Tuberculosis
b. Typhoid
c. Toxoplasmosis
d. Listeriosis

162. Tick-borne encephalitis is an example of metazoonosis type

a. I
b. II
c. III
d. IV

163. Non-obligatory cyclozoonosis is

a. Cysticercosis
b. Hydatidosis
c. Yellow fever
d. Leptospirosis

164. Anaerobic digestion of sewage takes place in

a. Activated Sludge treatment
b. Trickling filters
c. Septic tank
d. All of the above

165. Reservoir of KFD is

a. Porcupines
b. Monkeys
c. Cattle
d. Pig

166. The rotten egg smell of the water is due to

a. Iron
b. H_2S
c. Ammonia
d. Zinc

167. Defluoridation of water can be done by using

a. Sulphates
b. Carbonates
c. Phosphates
d. Bicarbonates

168. Byssinosis is caused by

a. Cane fibre
b. Cotton dust
c. Tobacco
d. Hay dusty or grain dust

169. DOTS strategy has been globally recognized as the best cost effective approach for the control of

a. Leprosy
b. Tuberculosis
c. Polio
d. Measles

170. Tuberculosis is an example for

a. Non obligatory cyclozoonoses
b. Metazoonoses
c. Saprozoonoses
d. Reverse zoonoses

171. Mantoux test is used in the diagnosis of

a. Leptospirosis
b. Echynococcosis
c. Sarcocystosis
d. Tuberculosis

172. Noise affects ear function more in the presence of

a. CO
b. CO_2
c. N_2
d. S_2

173. The disinfecting action of chlorine is mainly due to

a. H
b. OCl
c. HOCl
d. HCl

174. Addition of lime to water

a. Increases magnesium content
b. Increases total hardness
c. Reduces total hardness
d. None of the above

175. Malaria is an example for

a. Water borne disease
b. Water promoted disease
c. Water washed disease
d. Direct zoonosis

176. A strong sewage has a BOD (mg/l) of

a. 100-200
b. 150-250
c. Above 300
d. Below 300

177. An indicator of air pollution

a. Smoke index
b. Chlorine
c. H_2S
d. Sulphur dioxide

178. Animal involved in the life cycle of sylvatic yellow fever

a. Rat
b. Dog
c. Monkey
d. Cattle

179. A Chlamydial infection in man

a. Actinomycosis b. Parrot fever
c. Nocardiasis d. None of the above

180. Triple antigen protects children against

a. Cholera, whooping cough, T.B.
b. Whooping cough, diphtheria, tetanus
c. Cholera, diphtheria, tetanus
d. All of the above

181. Disinfecting action of chlorine is mainly due to

a. Hypochlorite ion
b. Hypochlorous acid
c. Free chlorine
d. None of the above

182. The drinking water should be moderately hard with the level of hardness at

a. Less than 1 (less than 50 mg/l)
b. 3-6 (150-300 mg/l)
c. 1-3 (50-150 mg/l)
d. 3-5 (150-250 mg/l)

183. The concentration of fluorine in drinking water regarded as optimum in India is

a. 0.005-0.1 PPM
b. 0.5-0.8 PPM
c. 0.1-0.2 PPM
d. 2.0-2.5 PPM

184. The stunning method in which the bleeding efficiency is more

a. Electrical stunning
b. Water jet stunning
c. Carbon dioxide method
d. Stunning with captive bolt pistol

185. Back washing is associated with

a. Slow sand filters
b. Rapid sand filters
c. Both a and b
d. Biological filters

186. UHT milk can be kept room temperature without spoilage upto

a. 24-48 h b. 20-25 days
c. 3 months d. 45 days

187. The retention period of chlorine during chlorination is

a. 30 min b. 60 min
c. 90 min d. None of the above

188. Drinking water should be

a. Soft water
b. Moderately hard
c. Hard water
d. None of the above

189. Widely used coagulant in mechanical filter is

a. Sodium hypochlorite
b. Alum
c. Calcium hypochlorite
d. Lime

190. Organism which utilizes plastic is

a. Pseudomonas putida
b. Zooglea ramigera
c. Alealigenes eutophus
d. Microsporum faeni

191. Example of direct zoonoses is

a. Yellow fever, plague
b. Rabies, Echinococcosis
c. Rabies, Brucellosis
d. None of the above

192. Zoonotic disease not reported in India

a. Chikungunya fever
b. West Nile fever
c. Plague
d. Swine fever

193. A water borne disease is

a. Cholera b. Scarlet fever
c. TB d. Brucellosis

194. Organic lead poisoning affects

a. CNS b. GIT
c. Kidney d. Bone marrow

195. Which one among the following is a live attenuated vaccine

a. Anthrax b. Oral polio
c. Rabies d. Tetanus

196. Natural Alumino-Silicate is known as
a. Permutit
b. Water coagulant
c. Zeolite
d. None of the above

197. The term Zoonoses includes
a. Animal-Soil-Man infection
b. Animal-Vector-Man infection
c. Animal-animal-Man infection
d. All of the above

198. Candy's filter is an example of
a. Gravity type filter
b. Biological filter
c. Pressure filter
d. Wet filter

199. Nine mile fever in man is caused by
a. Coxiella burnetii
b. Brucella abortus
c. S suis
d. None of the above

200. Zoonotic diseases transmitted by human faeces is
a. Cysticercosis b. Hydatidosis
c. Anthrax d. Small pox

201. The best method of large scale purification of water is
a. $KMnO_4$ b. Ozonisation
c. Chlorination d. Reverse osmosis

202. Nocturnal sweating with fever is found in
a. Anthrax b. Brucellosis
c. Leptospirosis d. None of the above

203. The favourable breeding sites for *Aedes aegypti* is
a. Rice fields
b. Sewage
c. Fresh/clean waters
d. All of the above

204. The optimum period of storage of water for purification is
a. 15-20 days b. 10-14 days
c. 20-30 days d. None of the above

205. Boiling of water can remove
a. Temporary hardness
b. Permanent hardness
c. Both a and b
d. None of the above

206. Flatcher's media is commonly used for the diagnosis of
a. Plague b. Yeast
c. Leptospira d. None of the above

207. Biotechnologically developed bacteria which can utilize crude oil is
a. Petrophagia b. Super bug
c. Oil terminator d. Wonder trap

208. The National TB centre is located at
a. Bangalore b. Delhi
c. Bhopal d. Kasoli

209. West Nile fever is transmitted by
a. Tick b. Flea
c. Mosquito d. None of the above

210. Leprosy is an example of
a. Anthropo Zoonosis
b. Zooanthroponosis
c. Direct Zoonosis
d. Indirect zoonosis

211. The recommended value for fluoride content in water is
a. 0.5% b. 1.5%
c. 23.5% d. 3.5%

212. The basic physiological water requirement per person is
a. 2 lit/day b. 4 lit/day
c. 5 lit/ day d. 6 lit/day

213. 'Blood splashing' is produced during
a. Sticking b. Stunning
c. De-boning d. Flaying

214. The most common form of anthrax in man is
a. Intestinal b. Cutaneous
c. Inhalational d. Nervous

215. Vaccine strain used for man to protect against JE

a. Yokohama b. Nakayama
c. 17D d. Hokaido

216. Dairy man's itch is caused by

a. Sarcoptes b. Trycophyton
c. M. blane d. Taenia

217. Air embolism is common in

a. High altitudes
b. Low altitudes
c. Plains
d. None of the above

218. Ultimate pH of beef carcass is

a. 7.0 b. 8.5
c. 5.5 d. 6.0

219. Magnitude of BOD of sewage in related to

a. Amount of organic matters
b. Amount of inorganic matters
c. Number of pathogenic bacteria
d. All of the above

220. Plumbism in man is associated with

a. Arsenic poisoning
b. Nitrate poisoning
c. Lead poisoning
d. Mercury poisoning

221. The chemical that increases 6 times more than the normal in SMOG is

a. SO_2 b. CO
c. CO_2 d. NO_2

222. Ionizing radiation with radio isotopes such as cobalt 60 and phosphorous 32 and X-rays affects mainly

a. Heart b. Spleen
c. Bone marrow d. Liver

223. High Nitrate content in drinking water leads to ..... in children

a. Diarrhea
b. Methaemoglobinaemia
c. Oxyhaemoglobinanemia
d. Fever

224. Pulmonary oedema is common in

a. Low altitudes
b. High altitudes
c. Plains
d. None of the above

225. Vaccine administered at the time of birth are

a. BCG, HIB, Chicken pox
b. DPT, BCG, MMR
c. BCG, OPV, Hepatitis B
d. None of the above

226. Carbon filtration is used to remove

a. Chlorine from water
b. Radioactive substances from water
c. Both a and b
d. None of the above

227. World zoonoses day is celebrated on

a. 24th March b. 6th July
c. 9th November d. 17th October

228. Lyme disease is caused by

a. Bartonella spp. b. Borrelia spp.
c. Brucella spp. d. Bacillus spp.

229. Rice field workers disease is a synonym for the disease

a. Brucellosis
b. Listeriosis
c. Leptospirosis
d. Japanese Encephalitis

230. Deer fly fever is

a. Borreliosis
b. Trypanosomiasis
c. Tularemia
d. Nipha virus infection

231. The pathogen which is able to multiply under refrigeration temperature

a. Staphylococci b. Clostridium
c. Campylobacter d. Listeria

232. Alcohol alizarin test in milk is used to detect

a. Added alcohol
b. Fermented alcohol
c. Acidity
d. Synthetic milk

233. Salt content of sea water is

a. 2.5% b. 3.5%
c. 4.5% d. 1.5%

234. In taeniasis man is

a. Incidental Host
b. Definitive Host
c. Dead end Host
d. Alternate Host

235. Zoonotic disease transmitted by human faeces is

a. Cysticercosis b. Coenurosis
c. Hydatidosis d. All of the above

236. Q fever is an example of

a. Direct zoonosis
b. Metazoonosis
c. Indirect zoonosis
d. Both a and b

237. Blood flukes not reported from man are

a. Schistosoma bovis
b. Schistosoma spindale
c. Schistosoma matthei
d. Schistosoma mekongi

238. Drug of choice for treatment of schistosomiasis in man is

a. Praziquantel b. Levamisole
c. Fenbendazole d. Triclabendazole

239. Nasal schistosomiasis can be treated with

a. Tartar emetic
b. Sodium antimonyl tartrate
c. Trichlorophon
d. All of the above

240. CLM is an example of

a. Saproanthropozoonosis
b. Saproamphizoonosis
c. Saprometanthropozoonosis
d. Direct zoonosis

241. VLM in children is caused by

a. Toxocara cati
b. Ancylostoma caninum
c. Ascaris suum
d. Toxocara vitulorum

242. Anal pruritis common in which helminth of infection in human

a. Pulex irritans
b. Enterobius vermicularis
c. Taenia solium
d. All of above

243. An erratic migration of larvae of *Toxocara canis* in man causing

a. Visceral larva migrans
b. Cutaneous larval migrans
c. Creeping eruption
d. Dermatitis

244. Parasite responsible for "eosinophilic meningioencephalitis" in man is

a. Angiostrongylus cantonensis
b. Angiostrongylus costaricensis
c. Angiostrongylus varosum
d. All of the above

245. Parasite responsible for "eosinophilic granulomata" in intestine of man is

a. Angiostrongylus cantonensis
b. Angiostrongylus costaricensis
c. Angiostrongylus varosum
d. All of the above

246. Muscular pain, oedema of eyelid and face in human are pathognomonic lesions of

a. Trichinellosis
b. Trichostrongylus
c. Ascariasis
d. None of the above

247. "Bancroftian filarisis" in man is caused by

a. *Wuchereria bancrofti*
b. *Brugia malayi*
c. *Loa loa*
d. *Brugia pahangi*

248. The term used for transference of an infectious agent between any two individuals that is not related as parent and offspring

a. Horizontal transmission
b. Vertical transmission
c. Transovarian transmission
d. Transovum transmission

249. Transference of an infectious agent from a parent organism to his or her progeny is known as
a. Vertical transmission
b. Transovum transmission
c. Transovarian transmission
d. Horizontal transmission

250. Means of vertical transmission in which infectious agents that have invaded oocytes when within the ovary are transmitted to a female's progeny
a. Transovarian transmission
b. Transovum transmission
c. Horizontal transmission
d. None of the above

251. A postulated means of vertical transmission in which, during ovulation, infectious agents invade chorionated ova (oocytes) and are transmitted to a female's progeny.
a. Transovum transmission
b. Horizontal transmission
c. Trans-stadial transmission
d. None of the above

252. Passage of an infectious organism from one developmental stage of a host individual to a later stage is termed as
a. Trans-stadial transmission
b. Transovum transmission
c. Horizontal transmission
d. Trans-stadial transmission

253. The fly which deposits the larvae in the external ear of man or in sores around the eyes is
a. Sarcophaga carnaria
b. Cordylobia anthropophaga
c. Wohlfahrtia magnifiea
d. Chrysomyia bezziana

254. River blindness caused by *Onchocerca volvulus* in man is transmitted by
a. Musca sp.
b. Stomoxys sp.
c. Simulium sp.
d. Tabanus sp.

255. Protozoa with zoonotic importance is
a. Histomonas meleagridis
b. Sarcocystis tenella
c. Tritrichomonas foetus
d. Giardia lamblia

256. Which one is a zoonotic disease?
a. Avian TB
b. Fowl paratyphoid
c. Campylobacteriosis
d. All of above

257. Ascolis test is performed in
a. Blood b. Serum
c. Hides and skin d. Urine

258. The zoonotic disease which involves birds in the transmission is/are
a. Salmonellosis
b. Campylobacterosis
c. Influenza
d. All of the above

259. Father of veterinary Public health
a. J.H. Steel b. Renatus Vegetius
c. Rudolf Virchow d. Robert Koch

260. Multiplication of bacteria is highest during ---------- of growth
a. Log phase b. Lag phase
c. Exponential phase d. Stationary phase

261. The indicator organism of fecal contamination is
a. Salmonella b. E-coli
c. Mycobacterium d. Coxiella burnetti

262. Green rot in egg is caused by
a. Clostridium perfrigens
b. Stahylococcus aureus
c. Pseudomonas fluorescens
d. Salmonella pullorum

263. Black rot in egg is caused by
a. Acinetobacter spp
b. Proteus melanovogenes
c. Serratia marcescens
d. Pseudomonas fluorescens

264. The most commonly reported bacteria responsible for food borne illness through egg is
a. Salmonella
b. Stahylococcus aureus
c. Coxiella burnetti
d. Clostridium perfrigens

265. Cabbage odour due to methanediol in sliced vacuum packed bacon is due to
a. Micrococcus b. Pediococcus
c. Proteus inconstans d. Clostridium

266. Yellow fever is an example of
a. Cyclozoonoses
b. Metazoonoses
c. Directzoonoses
d. All of the above

267. The Severity of the disease can be known by
a. Mortality Rate
b. Morbidity rate
c. Case Fatality rate
d. Natality rate

268. Population at risk is used for calculation of
a. Prevalence
b. Cumulative Incidence
c. Incidence rate
d. None of the above

269. Shoe leather epidemiology is also known as
a. Landscape Epidemiology
b. Participatory Epidemiology
c. Field Epidemiology
d. None of the above

270. Cross sectional study is a
a. Longitudinal study
b. Incidence study
c. Prevalence Study
d. Both a and b

271. Cohort study is a
a. Prospective study
b. Longitudinal study
c. Incidence study
d. All of the above

272. Koch Postulates cannot be applied for studying
a. Infectious diseases
b. Non infectious diseases
c. Infectious diseases in which pathogen could not be isolated
d. Both b and c

273. Evans Postulate can be applied for studying
a. Infectious diseases
b. Non infectious diseases
c. Both a and b
d. None of the above

274. The effect of an extraneous variable that can wholly or partly account for an apparent association between variables is called
a. Statistical variable
b. Confounding variable
c. Non statistical variable
d. None of the above

275. To study the chronic diseases like cancer which of the model is best suited
a. Epidemiological triad
b. Epidemiological wheel
c. Rothman pie model
d. Causal web mode

276. Necessary cause is
a. Component of every sufficient cause
b. Must be present to produce effect
c. Both a and b
d. None of the above

277. Notifying a single case of an eradicated disease from a country will be considered as
a. Endemic
b. Epidemic
c. Sporadic
d. Will not to be considered

278. Endemic occurrence of disease is
a. Constant presence of disease in population
b. Absence of clinical signs and presence of antibodies
c. Presence of huge mortality
d. Both a and b

279. A disease is continuously present in a high level affecting all age groups of a population equally is called as

a. Endemic b. Hyperendemic
c. Holoendemic d. Pandemic

280. The time of occurrence of cases in terms of a disease constitute

a. Spatial distribution
b. Temporal distribution
c. Focal distribution
d. Both a and c

281. Secondary Attack Rate (SAR) indicates

a. Number of animals attacked over a short period of time
b. Number of animals died in a short period of time
c. Number of animals that developed disease after exposed to a primary case
d. None of the above

282. Prevalence of a disease depends on

a. Incidence
b. Duration of disease
c. Both a and b
d. None of the above

283. Fetal Death Ratio (FDR) indicates

a. Number of fetal deaths/ Number of both live and dead births
b. Number of fetal deaths/ Number of live birth
c. Number of live birth/ Number of fetal deaths
d. None of the above

284. Maps used to display quantitative information as discrete shaded units of area, graded in density is

a. Choroplethic Maps
b. Isoplethic Maps
c. Isomorbs
d. Isomorts

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a. Pathogenicity of infection
b. Gradient of infection
c. Clinical infection
d. None of the above

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b. Multiplication inside the vector
c. Development but no multiplication inside the vector
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a. Proportion of true negatives detected
b. Proportion of false positives detected
c. Proportion of false negatives detected
d. Proportion of true positives detected

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b. Proportion of false positives detected
c. Proportion of true negatives detected
d. Proportion of true positives detected

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a. Prevalence
b. Incidence
c. Occurance
d. None of the above

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a. Ecology
b. Landscape Epidemiology
c. Demographic Study
d. All of the above

293. Sporadic occurrence of disease occurs

a. Irregularly
b. Haphazardly
c. In form of small localized outbreaks
d. All the of above

294. Ropiness of milk is caused by

a. E. coli
b. Alcaligens viscolactis
c. Bacillus cereus
d. Clostridium perfrigens

295. An indicator organism for efficient pasteurization is

a. Salmonella typhi
b. Clostridium perfrigens
c. Listeria monocytogenes
d. Coxiella burnetii

296. Person to person transmission of infection via the food is commonly seen in

a. Yersiniosis
b. Campylobacteriosis
c. Trichomoniasis
d. Salmonellosis

297. The headquarters of FAO is in

a. Geneva
b. Rome
c. New york
d. London

298. The headquarters of OIE is in

a. Rome
b. Geneva
c. New york
d. Paris

299. The headquarters of WHO is in

a. Rome
b. Geneva
c. New york
d. Paris

300. First veterinary school was started in the year in

a. Rome
b. Geneva
c. Lyon France
d. Paris

301. Ante mortem inspection fails to detect

a. Brucellosis
b. Tuberculosis
c. Salmonellosis
d. Hydatidosis

302. Post mortem inspection fails to detect

a. Peritoneal abscess
b. Johne's disease
c. Tuberculosis
d. Tetanus

303. Which is not a type of epidemiological study

a. Cross sectional study
b. Cohort study
c. Case control study
d. Pilot study

304. Bleeding time required in cattle is about _____minutes after sticking.

a. 2
b. 6
c. 10
d. 15

305. Accessory spleen are found in

a. Cow
b. Horse
c. Poultry
d. Pig

306. Gut sweet bread is nothing but

a. Spleen
b. Liver
c. Pancreas
d. Kidney

307. _____are bled by bilateral severance of the carotid arteries and jugular veins by an incision across the throat region caudal to larynx.

a. Sheep
b. Pig
c. Cattle
d. Rabbit

308. In commercial practice pig are generally stunned by using

a. CO_2 gas
b. N2 gas
c. Captive bolt pistol
d. Twisting of neck

309. In commercial practice poultry are generally stunned by using

a. CO_2 gas
b. N_2 gas
c. Electrified water bath
d. Twisting of neck

310. In electrical stunning of cattle the strength of the current should not be less than ..... and voltage less than 75 V

a. 350 mA
b. 450 mA
c. 250 mA
d. 150 mA

311. The passage of electric current through the brain results in a rapid rise of blood pressure from normal 120-mmHg to ..... mmHg

a. 250 b. 500

c. 400 d. 600

312. Pelt burn - black coloured charred marks are seen on the back region due to ..... stunning

a. Gas

b. Concussion

c. Low voltage

d. High voltage head to back

Answer Sheet

1. a	2. a	3. c	4. c	5. c	6. a	7. b	8. b	9. c	10. a
11. a	12. c	13. d	14. b	15. c	16. c	17. a	18. c	19. a	20. c
21. d	22. d	23. d	24. c	25. b	26. c	27. b	28. c	29. b	30. c
31. b	32. c	33. a	34. d	35. b	36. c	37. c	38. b	39. b	40. d
41. a	42. b	43. b	44. d	45. a	46. c	47. c	48. c	49. c	50. b
51. b	52. c	53. a	54. c	55. b	56. a	57. b	58. c	59. c	60. b
61. c	62. b	63. c	64. b	65. b	66. a	67. c	68. c	69. a	70. b
71. b	72. a	73. b	74. d	75. a	76. b	77. a	78. b	79. c	80. a
81. b	82. a	83. a	84. a	85. a	86. c	87. a	88. c	89. c	90. d
91. b	92. b	93. c	94. c	95. c	96. c	97. c	98. a	99. b	100. a
101. c	102. b	103. d	104. c	105. a	106. b	107. b	108. c	109. b	110. c
111. c	112. c	113. b	114. d	115. d	116. c	117. a	118. c	119. d	120. a
121. b	122. b	123. b	124. b	125. b	126. c	127. a	128. a	129. b	130. c
131. c	132. c	133. c	134. c	135. b	136. a	137. b	138. d	139. a	140. d
141. a	142. c	143. c	144. c	145. c	146. b	147. c	148. c	149. b	150. d
151. a	152. a	153. a	154. a	155. c	156. b	157. d	158. c	159. c	160. a
161. c	162. d	163. b	164. c	165. b	166. b	167. c	168. b	169. b	170. d
171. d	172. b	173. c	174. c	175. b	176. c	177. a	178. c	179. b	180. b
181. b	182. c	183. a	184. c	185. b	186. b	187. b	188. b	189. b	190. d
191. c	192. b	193. a	194. c	195. b	196. c	197. d	198. c	199. a	200. a
201. c	202. b	203. d	204. b	205. a	206. c	207. b	208. a	209. c	210. c
211. b	212. a	213. b	214. b	215. c	216. b	217. b	218. c	219. a	220. c
221. d	222. c	223. b	224. b	225. c	226. b	227. b	228. b	229. c	230. c
231. d	232. c	233. b	234. b	235. a	236. c	237. b	238. a	239. d	240. a
241. a	242. b	243. a	244. a	245. b	246. a	247. a	248. a	249. a	250. a
251. a	252. a	253. c	254. c	255. d	256. d	257. c	258. d	259. a	260. a
261. b	262. c	263. b	264. a	265. c	266. b	267. c	268. c	269. c	270. d
271. d	272. d	273. c	274. b	275. d	276. c	277. b	278. d	279. b	280. b
281. c	282. c	283. b	284. a	285. b	286. b	287. d	288. d	289. d	290. c
291. b	292. b	293. d	294. b	295. d	296. d	297. b	298. d	299. b	300. c
301. d	302. d	303. d	304. b	305. a	306. c	307. c	308. a	309. c	310. c
311. a	312. d								

Unit - 6

Veterinary Pharmacology & Toxicology

Classification of Antimicrobial Agents Based on the Chemical Nature

S.No	Classification	Examples
1	Sulfonamides and related drugs	sulfadiazine, paraaminosalicylic acid
2	Diaminopyrimidines	Trimethoprim, pyrimehamine
3	Quinolones and fluroquinolones	Nalidixic acid, norfloxacin, ciprofloxacin , enrofolxacin, Morphofloxacin
4	Beta lactum antibiotics	Penicillin, cephalosporins, monobactams, carbapenems
5	Tetracyclines	Oxytetracyclines, Doxycyclines, Minocyclines
6	Nitrobenzene derivate	Chloarmphenicol
7	Aminoglycosides	Streptomycion, Gentamicin, Neomycin
8	Macrolide	Ertyromycin, Roxithromycin. Azithromycin
9	Polypeptide	Polymyxin-B, Colistin, Bacitracin
10	Glycopeptides	Vancomycin, Teicoplanin
11	Nitrofuran derivatives	Nitrofurantoin, Fruazolidone
12	Nitroimidazoles	Metronidazole, Tinidazole
13	Nicotinic acid derivatives	Isoniazid, Pyrizinamide
14	Polyene antibiotics	Nystatin, Amphotericin-B
15	Azole derivatives	Miconozole, Ketokonazole. Fluconazole

Classification of antimicrobial drugs based on their spectrum of activity

S.No	Narrow-Spectrum	Broad- Spectrum
1	Penicillin G	Ampicillin
2	Streptomycin	Carbenicillin
3	Erythromycin	Cephalosphorins
4	Lincomycin	Chloramphenicol
5	Vancomycin	Tetracyclines
6	Polymyxin-B	Sulphonamides

Examples for bactericidal and bacteriostatic drugs

S.No	Bactericidal	Bacteriostatic
1	Penicillions	Chloramphenicol
2	Cephalosporins	Tetracyclines
3	Aminoglycosides	Macrolides
4	Quinolones	Sulphonamides
5	Cycloserine	Trimethoprim
6	Vancomycin	Lincosamides
7	Polymyxins	Tylosin
8	Bacitracin	Novobiocin
9	Rifampicin	
10	Potentiated sulphonamides	

Classification of antimicrobial agents based on the tissue distribution pattern

S.No	Tissue distribution pattern	Examples
1	Distributed to extra cellular fluid	Penicillins, Cephalosporins, Aminoglycosides
2	Distributed to total body water	Fluroquinolones, Chloramphenicol, Doxycyclines, Minocyclines, Erythromycin, Clindamycin
3	Distributed to CSF	Sulphonamides, Fluroquinolones, Doxycyclines, Minocyclines, Metronidazole, Rifampicin
4	Concentrated in bile	Doxycyclines, Minocyclines, Rifampicin, Erythromycin, Clindamycin

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c. Bacillus cereus
d. Clostridium perfrigens

295. An indicator organism for efficient pasteurization is
a. Salmonella typhi
b. Clostridium perfrigens
c. Listeria monocytogenes
d. Coxiella burnetii

296. Person to person transmission of infection via the food is commonly seen in
a. Yersiniosis
b. Campylobacteriosis
c. Trichomoniasis
d. Salmonellosis

297. The headquarters of FAO is in
a. Geneva
b. Rome
c. New york
d. London

298. The headquarters of OIE is in
a. Rome
b. Geneva
c. New york
d. Paris

299. The headquarters of WHO is in
a. Rome
b. Geneva
c. New york
d. Paris

300. First veterinary school was started in the year in
a. Rome
b. Geneva
c. Lyon France
d. Paris

301. Ante mortem inspection fails to detect
a. Brucellosis
b. Tuberculosis
c. Salmonellosis
d. Hydatidosis

302. Post mortem inspection fails to detect
a. Peritoneal abscess
b. Johne's disease
c. Tuberculosis
d. Tetanus

303. Which is not a type of epidemiological study
a. Cross sectional study
b. Cohort study
c. Case control study
d. Pilot study

304. Bleeding time required in cattle is about _____minutes after sticking.
a. 2
b. 6
c. 10
d. 15

305. Accessory spleen are found in
a. Cow
b. Horse
c. Poultry
d. Pig

306. Gut sweet bread is nothing but
a. Spleen
b. Liver
c. Pancreas
d. Kidney

307. _____are bled by bilateral severance of the carotid arteries and jugular veins by an incision across the throat regida caudal to larynx.
a. Sheep
b. Pig
c. Cattle
d. Rabbit

308. In commercial practice pig are generally stunned by using
a. CO_2 gas
b. N2 gas
c. Captive bolt pistol
d. Twisting of neck

309. In commercial practice poultry are generally stunned by using
a. CO_2 gas
b. N_2 gas
c. Electrified water bath
d. Twisting of neck

310. In electrical stunning of cattle the strength of the current should not be less than ..... and voltage less than 75 V
a. 350 mA
b. 450 mA
c. 250 mA
d. 150 mA

311. The passage of electric current through the brain results in a rapid rise of blood pressure from normal 120-mmHg to ..... mmHg

a. 250 b. 500

c. 400 d. 600

312. Pelt burn - black coloured charred marks are seen on the back region due to ..... stunning

a. Gas
b. Concussion
c. Low voltage
d. High voltage head to back

Answer Sheet

1. a	2. a	3. c	4. c	5. c	6. a	7. b	8. b	9. c	10. a
11. a	12. c	13. d	14. b	15. c	16. c	17. a	18. c	19. a	20. c
21. d	22. d	23. d	24. c	25. b	26. c	27. b	28. c	29. b	30. c
31. b	32. c	33. a	34. d	35. b	36. c	37. c	38. b	39. b	40. d
41. a	42. b	43. b	44. d	45. a	46. c	47. c	48. c	49. c	50. b
51. b	52. c	53. a	54. c	55. b	56. a	57. b	58. c	59. c	60. b
61. c	62. b	63. c	64. b	65. b	66. a	67. c	68. c	69. a	70. b
71. b	72. a	73. b	74. d	75. a	76. b	77. a	78. b	79. c	80. a
81. b	82. a	83. a	84. a	85. a	86. c	87. a	88. c	89. c	90. d
91. b	92. b	93. c	94. c	95. c	96. c	97. c	98. a	99. b	100. a
101. c	102. b	103. d	104. c	105. a	106. b	107. b	108. c	109. b	110. c
111. c	112. c	113. b	114. d	115. d	116. c	117. a	118. c	119. d	120. a
121. b	122. b	123. b	124. b	125. b	126. c	127. a	128. a	129. b	130. c
131. c	132. c	133. c	134. c	135. b	136. a	137. b	138. d	139. a	140. d
141. a	142. c	143. c	144. c	145. c	146. b	147. c	148. c	149. b	150. d
151. a	152. a	153. a	154. a	155. c	156. b	157. d	158. c	159. c	160. a
161. c	162. d	163. b	164. c	165. b	166. b	167. c	168. b	169. b	170. d
171. d	172. b	173. c	174. c	175. b	176. c	177. a	178. c	179. b	180. b
181. b	182. c	183. a	184. c	185. b	186. b	187. b	188. b	189. b	190. d
191. c	192. b	193. a	194. c	195. b	196. c	197. d	198. c	199. a	200. a
201. c	202. b	203. d	204. b	205. a	206. c	207. b	208. a	209. c	210. c
211. b	212. a	213. b	214. b	215. c	216. b	217. b	218. c	219. a	220. c
221. d	222. c	223. b	224. b	225. c	226. b	227. b	228. b	229. c	230. c
231. d	232. c	233. b	234. b	235. a	236. c	237. b	238. a	239. d	240. a
241. a	242. b	243. a	244. a	245. b	246. a	247. a	248. a	249. a	250. a
251. a	252. a	253. c	254. c	255. d	256. d	257. c	258. d	259. a	260. a
261. b	262. c	263. b	264. a	265. c	266. b	267. c	268. c	269. c	270. d
271. d	272. d	273. c	274. b	275. d	276. c	277. b	278. d	279. b	280. b
281. c	282. c	283. b	284. a	285. b	286. b	287. d	288. d	289. d	290. c
291. b	292. b	293. d	294. b	295. d	296. d	297. b	298. d	299. b	300. c
301. d	302. d	303. d	304. b	305. a	306. c	307. c	308. a	309. c	310. c
311. a	312. d								

Unit - 6

Veterinary Pharmacology & Toxicology

Classification of Antimicrobial Agents Based on the Chemical Nature

S.No	Classification	Examples
1	Sulfonamides and related drugs	sulfadiazine, paraaminosalicylic acid
2	Diaminopyrimidines	Trimethoprim, pyrimehamine
3	Quinolones and fluroquinolones	Nalidixic acid, norfloxacin, ciprofloxacin , enrofolxacin, Morphofloxacin
4	Beta lactum antibiotics	Penicillin, cephalosporins, monobactams, carbapenems
5	Tetracyclines	Oxytetracyclines, Doxycyclines, Minocyclines
6	Nitrobenzene derivate	Chloarmphenicol
7	Aminoglycosides	Streptomycion, Gentamicin, Neomycin
8	Macrolide	Ertyromycin, Roxithromycin. Azithromycin
9	Polypeptide	Polymyxin-B, Colistin, Bacitracin
10	Glycopeptides	Vancomycin, Teicoplanin
11	Nitrofuran derivatives	Nitrofurantoin, Fruazolidone
12	Nitroimidazoles	Metronidazole, Tinidazole
13	Nicotinic acid derivatives	Isoniazid, Pyrizinamide
14	Polyene antibiotics	Nystatin, Amphotericin-B
15	Azole derivatives	Miconozole, Ketokonazole. Fluconazole

Classification of antimicrobial drugs based on their spectrum of activity

S.No	Narrow-Spectrum	Broad- Spectrum
1	Penicillin G	Ampicillin
2	Streptomycin	Carbenicillin
3	Erythromycin	Cephalosphorins
4	Lincomycin	Chloramphenicol
5	Vancomycin	Tetracyclines
6	Polymyxin-B	Sulphonamides

Examples for bactericidal and bacteriostatic drugs

S.No	Bactericidal	Bacteriostatic
1	Penicillions	Chloramphenicol
2	Cephalosporins	Tetracyclines
3	Aminoglycosides	Macrolides
4	Quinolones	Sulphonamides
5	Cycloserine	Trimethoprim
6	Vancomycin	Lincosamides
7	Polymyxins	Tylosin
8	Bacitracin	Novobiocin
9	Rifampicin	
10	Potentiated sulphonamides	

Classification of antimicrobial agents based on the tissue distribution pattern

S.No	Tissue distribution pattern	Examples
1	Distributed to extra cellular fluid	Penicillins, Cephalosporins, Aminoglycosides
2	Distributed to total body water	Fluroquinolones, Chloramphenicol, Doxycyclines, Minocyclines, Erythromycin, Clindamycin
3	Distributed to CSF	Sulphonamides, Fluroquinolones, Doxycyclines, Minocyclines, Metronidazole, Rifampicin
4	Concentrated in bile	Doxycyclines, Minocyclines, Rifampicin, Erythromycin, Clindamycin

5	Concentrated in Urine	Fluroquinolones, Sulphonamides, Nalidixic acid, Cephalosporins, Nitrofurantoin, Penicillins Vancomycin

Classifications of fluroquinolones

S.No	Classification	Examples
1	First generation	Nalidixic acid, Oxalinic acid, Cinoxacin, Piromidic acid, Flumequine
2	Second generation	Norfloxacin, Ciprofloxacin, Ofloxacin, Enrofloxacin
3	Third generation	Pefloxacin, Marbofloxacin, Sarafloxacin
4	New generation	Gatifloxacin, Moxifloxacin, Levofloxacin

Classification of antimicrobial agents based on the mechanism of actions

S.No	Mechanism of action	Examples
1	Inhibition of cell wall synthesis	Penicillin, Cephalosporin, Cycloserine, Vancomycin, Bactracin
2	Cause leakage from cell membrane	Polypeptides and Polyenes
3	Inhibit protein synthesis	Tetracyclines, Chloramphenicol, Erytromycin, Clindamycin
4	Cause misreading of mRNA code and affect permeability	Aminoglycosides
5	Interfere with DNA function	Rifampin, Metronidazole
6	Interfere with DNA synthesis	Idoxuridine, Acyclovir, Zidovudine
7	Interfere with intermediary metabolism	Sulfonamides, Sulfones, Trimethoprim
8	Inhibit DNA Gyrase	Fluroquinolones

Antifungal drugs

S.No	Site of action	Examples
1	Cell wall	Ecchinocandins – Caspofungin
2	Cell membrane	***Polyenes*** - Amphotericin B, Nystatin, Natamycin
		Azoles - Imidazole - Ketoconazole, Miconazole, Enilconazole, clotrimazole, Triazole - Fluconazole, Itraconazole, Voriconazole
		Allylamines - Terbinafine , Naftidine
3	Nucleic acid synthesis	5 – Flucytosine
4	Others	Griseofulvin → inhibit mitosis → interfere with polymerisation of microtubule and disorganise the spindle formation

Classifications of sulphonamides based on their type and duration of actions

S.No	Classifications	Examples
Systemically acting sulphonamides		
1	Short acting (duration <12 hrs)	Sulphadiazine, Sulphafurazole, Sulphamerazine, Sulphachlorpyridazine, Sulphathiazole and sulphanilamide
2	Intermediate acting (Duration 12-24 hrs)	Sulphadimidine, Sulphamethoxazole, Sulphamoxole and Sulphaphenazole
3	Long acting (Duration 24-48 hrs)	Sulphadimethoxine, Sulphaethoxypyridazine, Sulphamethoxypyridazine, Sulphabromomethazine
4	Ultra long acting (Duration>48 hrs)	Sulphodoxine and Sulphamethopyrazine
Locally acting sulphonamides		
1	Locally acting	Succinyl sulphathiazole, Phthaly sulphathiozole, Phthaly sulphacetamide, Sulphaguinidine and Sulphasalzine
Topically acting sulphonamides		
1	Topically acting	Sulphacetamide, Mafenide, Sliver sulphadiazine

Classifications of cephalosporins

S.No	Classification	Examples
1	First generations	Cefalotin, Cefazolin, Cefalexin, Cefadroxil, Cefapirin, Cefaloridine, Cefalonium, Cefradine, Cefacetrile and Cefaloglycin
2	Second generations	Cefuroxime, Cefuroxime axetil, cefaclor, Cefamandole, Cefonicid, Cefonicid, Ceforanide, Cefotiam and Cefprozil
3	Third generations	Cefotaxime, Ceftiofur, Ceftriaxone, Ceftazidime, Cefoperazone, Cefovecin, Cefixime, Cefpodoxime and Ceftizoxime
4	Fourth generations	Cefepime, Cefpirome, Cefquinome
5	Fifth generations	Ceftobiprole and Ceftaroline

Locally active anti-fungal drugs used to treat topical infections

S.No	Classification	Examples
1	Iodine preparations (Iodophores)	Tincture iodine, Potassium iodide
2	Copper preparations	$CuSO_4$, Cuprimycin
3	Phenols	Thymol, Hexachlorphene
4	Fatty acids and salts	Propionates, Undecylenates
5	Organic acids	Benzoic acid, Salicylic acid
6	Dyes	Gentian violet, Carbofuschin
7	Hydroxyquinolones	Iodochlorhydroxyquin, Nitrofurans
8	Imidazole	Miconazole, Clotrimazole, Thiabendazole
9	Polyene antibiotics	Amphotericin B, Nystatin, Natamycin
10	Miscellaneous	Tolnaftate, Haloprogin, Dichlorofen and Monosulfiram

Anti-viral agents

S.No	Mechanism of action	Examples
1	Agents preventing attachment and penetration	Immunoglobulin, Interferon
2	Agents preventing entry	Amantidine
3	Nucleoside analogues	Idoxuridine, Trifluridine (Pyrimidine) and Vidarabine (Purine)

4	Inhibitor of reverse transcription	Zidovudine (AZT), Acyclovir, Ganciclovir, Ribavirin
5	Inhibitor of mRNA translation	Antisense oligopeptides
6	Interference with maturation	Methisazone, 2'Diodyl-d-Glucose
7	Improving host resistance	Interferons, Gamma globulins
8	Improving host immunomodulation	Inosiplex, levamisole , Poly I, Poly C

Anti-neoplastic agents

S.No	Classification	Examples
	Alkylating agents	
1	Nitrogen mustard	Mechlorethamine, Cyclophosphamide, Melphalan, Uracil, Mustard, Chlorambucil
2	Alkyl Sulfonates	Busulfan
3	Nitrosoureas	Carmustine, Lomustine, Semustine, Streprozocin
4	Triazene	Dacarbazine
	Antimetabolites	
1	Folic acid analogues	Methotrexate
2	Pyrimidine analogues	Fluoruracil, Cytarabine, Cytosine arabinoside
3	Purine analogues	6- mercaptopurine, 6- thioguanine
	Natural products	
1	Vinca alkaloids	Vinblastine, Vincristine sulphate
2	Dactinomycin	Actinomycin D
3	Arthracychine antibiotics	Daunorubicin, Doxarubicin
4	Glycopeptides	Bleomycin
5	Enzymes	L-asparaginase obtained from *E- coli*
	Hormones and their antagonists	
1	Adrenocorticosteroids	Glucocorticoid
2	Progestin	Progesterone
3	Estrogen	Diethylstilbestrol
4	Antiestrogen	Tamoxifen
5	Anti-androgen	Flutamide, Nilutamide
6	Androgen	Testosterone
	Miscellaneous	
1	Cisplatin, Mitotane, Hydroxyurea, Proacarbazine & Glutathiamine	

Antidotes

Name of the compound	Antagonist / Antidote
Atropine sulphate	Physostigmine
Morphine	Nalloxone
Pentobarbital sodium	Yohimbine
Organo-phosphorus compound (OPC)	2-PAM
5-OH Tryptamine	Methysergide, LSD, Ergot alkaloid
Kallikrien	Aprotonin
Angiotensin	Saralosin
Vitamin K	Coumarine
Alcohol	NaHCO3, or Na-citrate
Aercoline	Atropine sulphate
Barbiturate	Amphetamine
Barium	MgSO4
Belladona	Tannic acid
Benzoic acid	Siquil, Diuretics
Bromides	Chlorides
Camphor	Siquil, Saline diuretics
Organophosphate, Carbamates	Atropine Sulfate , Pralidoxime
Castor oil	Lavage, Atropine sulphate
Organochlorines	Cholestyramine
Iron toxicosis	Deferoxamine
Chloroform	O_2, Coramine, Ca-borogluconate
Carbon Monoxide	Oxygen
Digitalis	Lavage, Propranolol, Na2SO4
Calcium channel blocker	Glucagon, Calcium chloride, calcium gluconate
Beta blockers	Glucagon
Digoxin	Digiband
Insulin	Glucagon
Cyclophosphamide	Mesna

Iron toxicosis Deferoxamine	Inorganic phosphorus $CuSO_4$
Arsenic	Dimercaprol (BAL-British Anti Lewisite) D-Pennicillamine
Mercury	BAL Dimercaptosuccinic acid (DMSA) D-Pennicillamine
Lead	Succimer Di sodium calcium edentate (Ca EDTA) Dimercaprol (BAL)
Inorganic phosphorus	CuSO4
Amphetamines	Ammonium chloride
Iron	Deferoxamine
Nitrate	Methylene blue
Cyanide	Sodium nitrite and sodium thiosulphate
Amitraz	Atipamezole is a specific Yohimbine is a non specific or symptomatic
Xylazine	Yohimbine, Tolazine
Methyl alcohol	Ethanol
Ethylene glycol	Fomepizole
Acetaminophen/ Tylenol/Paracetamol	N-acetylcysteine (NAC)
Carbon tetrachloride	N-acetylcysteine (NAC)
Coumarin/ Warfarin	Phytonadione (Vitamin K1)
Heparin	Protamine sulfate
Valproic Acid	Levocarnitine
Bracken fern	Thiamine (Vitamine B1)
Copper , Lead, Mercury	D-penicillamine (Chelating agent)
Mercury, Copper, Gold	Dimercaprol, Succimer
Benzodiazepine	Flumazenil
Organo chloride	Activated charcoal
Opiods	Naloxone
Dopamine	Phentolamine (Regitine)
Isoniazide	Pyridoxine

Gamma benzene hexachloride	Cholestyramine
Formaldehyde	Folic acid
Hydrogen sulfide	Sodium nitrate
Fluorouracil	Leucovorin calcium
Oxalate	Lime water
Urea	Vinegar or 5% acetic acid
AChE inhibitors	Atropine sulfate, Pralidoxime
Antimuscarinic/Anticholinergic	Physostigmine
Methotrexate	Leucovorin

Therapeutic classification of adrenergic drugs

S.No	Classification	Examples
1	Presser agents	Noradrenaline, Ephedrine, Dopamine, Phenylephrine, Methoxamine, Mephentermine
2	Cardiac Stimulants	Adrenaline, Isoprenaline
3	Bronchodilators	Isoprenaline, Salmeterol, Salbutamol, Formoterol, Terbutaline, Dobutamine
4	Nasal Decongestants	Phenylephrine, Naphazoline Xylometazoline, Pseudoephedrine, Oxymetazoline, Phenyl propanolamine
5	CNS stimulants	Amphetamine, Methamphetamine, Dexamphetamine
6	Anorectics	Fenfluramine, Sibutramine, Dexfenfluramine
7	Uterine relaxant & Vasodilators	Ritodrine, Isoxsuprine, Salbutamol, Terbutaline

Histamine and antihistaminic agents

S.No	Classifications	Agonists	Antagonists
1	Selective H_1	2-Methylhistamine, 2-thiazolethylamine	Chlorpheniramine, Promethazine, Mepyramine, Terfenadine
2	Specific H_2	4-Methylistamine, Betazole, Impromidine	Cimetidine, Ranitidine, Famotidine, Nizatidine
3	Selective H_3	α-methylhistamine, Imetit	Thioperamide, Impromidine, Burimamide, Clobenpropit

Antihypertensive drugs

S.No	Classifications	Sub-division	Examples
1	Diuretics	Thiazides and related agents	Hydrochlorothiazide, Clorethalidone
		Loop diuretics	Furosemide, Bumetanide, Ethacrynic acid
		K^+ sparing diuretics	Spironolactone, Triamterene, Amiloride
2	Sympatholytic drugs	Centrally acting drugs	Methyldopa, Clonidine, Guanabenz, Guanfacin
		Ganglionic blocking agents	Trimethaphan
		Postsynaptic adrenergic neuron blocking agents	Reserpine, Guanethidine, Guanadrel
		β- adrenergic antagonists	Propranolol, Metoprolol
		α- adrenergic antagonists	Prazosin, Terazosin, Phenoxybezamine, Phentolamine
		Mixed antagonists	Labetalol (α_1, β_1, β_2)
3	Vasodilators	Arterial	Hydralazine, Minoxidil, Diazoide
		Arterial and Venous	Nitroprusside
4	Ca^{2+} Channel Blockers		Verapamil, Diltiazem, Nifedipine, Nicardipine, Nitrendipine
5	ACE inhibitors		Captopril, Enalapril, Lisinopril

Hormones and their antagonist

Hormone	Antagonist
Androgen	Flutamide
GnRH	Gonacon
Progesterone	Mifepristone and Aglepristone
Oxytocin	Atosiban and Nolasiban
Estrogen	Tamoxifen and Raloxifene
Antiprolactin	Bromocriptin and Cabergoline
5α reductase inhibitor	Finastride

Drugs and their antagonist

Drug	Antagonist
Xylazine	Yohimbine
Diazepam	Flumazenil
Amitraz	Athifamazole
Ivermectin	Picrotoxin
Etorphine	Diprenorphine/Naltrexone
Barbiturates	Bemergride

Antibiotics and their source

Microorganism	Antibiotics
Bacillus colistinus	Colistin (polymyxin E)
Bacillus polymyxa	Polymixin B
Bacillus subtilis (B. lichniformis)	Bacitracin
Chromobacterium violaceum	Monobactam
Micromonospora purpuria	Gentamicin
Penicillium notatum	Penicillin G
Penicillin griseofulvin	Griseofulvin
Streptomyces cattleya	Carbapenam
Streptomyces erythreus	Erythromycin
Streptomyces fradiae	Neomycin/tylosin
Streptomyces griseus	Streptomycin
Streptomyces kanamyceticus	Kanamycin
Streptomyces lincolnensis	Lincomycin
Streptomyces medeterranei	Rifamycin
Streptomyces nodosus	Amphotericin B
Streptomyces orientalis	Vancomycin
Streptomyces venezuelae	Chloramphenical
Streptomyces spectabilis	Spectinomycin
Streptomyces tenebrans	Apramycin

Streptomyces rimosus	Oxytetracycline
Streptomyces aureofaciens	Chlortetracycline

Antiparasitic drugs

Class	Drugs	Mode of Action
Avermectin	Ivermectin Abamectin Doramectin Eprinomectin Selamectin	Derived from *Streptomyces avermitilis* Bind to glutamate-gated chloride channel receptor in nematode and arthropod nerve cells. Paralyze (flaccid) the pharynx, the body wall, and the uterine muscles of nematodes Use: GIN/Lung nematodes/ Migrating strongyles in horses/*Dirofilaria* in dogs
Milbemycin	Moxidectin Milbemycin oxime	MOA similar to avermectins but a longer half-life Use: Similar to avermectins
Benzimidazole (Carbamates)	Albendazole Fenbendazole Mebendazole Oxfendazole Parbendazole Oxibendazole Triclabendazole	Binds to the microtubules inhibiting its polymerization or assembly into microtubules. Impair uptake of glucose Use: GIN (Albendazole & triclabendazole exclusively active against liver fluke)
Benzimidazoles (Thiazoles)	Thiabendazole Cambendazole	-do-
Pro-benzimidazoles	Febantel Netobimin Thiophanate	-do-
Imidazothiazole	Levamisole Tetramisole	Nicotinic agonists act as ganglion stimulant resulting in sustained muscle contractions Use: GIN(ruminants)/ Eyeworm /Lung nematodes
Tetrahydropyrimidine	Morantel Pyrantel	Cholinergic Agonist Spastic paralysis as in levamisole Use: GIN/ Tapeworms in horses

Organophosphate	Trichlorphon Haloxon Dichlorvos Naphthalophos	Cholinesterase inhibitor Use: GIN
Salicylanilide	Closantel Oxyclozanide Rafoxanide Niclosamide	Inhibition of mitochondrial phosphorylation/ uncoupling of oxidative phosphorylation. Closantel is endo-ectocidal Use: Fluke / Tapeworm
Nitrophenolic compounds	Nitroxynil, Nitroscanate	Inhibition of mitochondrial phosphorylation/ uncoupling of oxidative phosphorylation Use: Liver fluke/*Haemonchus* in sheep/ Tapeworms and GIN in dogs
Benzoene-disulphonamide	Clorsulon	Inhibition of Glycolysis Use: Liver fluke (ruminants)
Pyrazinaisoquinoline	Praziquantel Epsiprantel	Causes tegumental damage, muscular contraction of cestodes, followed by their death and expulsion. Use: Tapeworms
Heteroçyclic compounds	Piperazine	Hyperpolarizing the nerve membrane, which leads to flaccid paralysis Blocks succinate production by the worm Use: GIN
	Diethylcarbamazine	Piperazine derivative Inhibitor of arachidonic acid metabolism in microfilaria. Makes microfilariae more susceptible to immune attack. Mazzotti reaction is associated Use: Lungworms / Filarial worms
	Dichlorophen	Uncoupling of oxidative phosphorylation Use: Dogs tapeworm
	Phenothiazine	MOA not clear Use: GIN
Arsenicals	Thiacetarsamide Melorsamine Arsenamide	Inhibition of Glycolysis Use: Dirofilaria in dogs

Spiroindoles	Derquantel	Derived from *Penicillium simplicissimum*. Antagonist of B-subtype nicotinic acetylcholine receptors located at the nematode neuromuscular junction and it inhibits 45-pS channels, leading to a flaccid paralysis of nematodes. Use: Gastrointestinal nematodes in sheep
Symmetrical diamidine	Tribendimidine	Derivative of Amidantel L-type (levamisole and pyrantel) nicotinic acetylcholine receptor agonist Use: *Ascaris* and hookworms
Alkaloid	Pelletierine sulphate	Derived from the root-bark of the pomegranate tree Used as an anthelmintic and anti-amoeboid Use: Tapeworms / Ringworms / Nematodes

Cholinergic Receptors

* Nicotinic (N_M and N_N)

* Muscarinic (M_1, M_2, M_3, M_4, M_5)

* Nicotinic: Ligand gated cation channels

* Muscarinic: G-protein coupled receptors

Feature	N_M (muscle)	N_N (Neuronal)
Distribution	N-M junction (neuromuscular Jn.)	Sympathetic, Parasympathetic, CNS, Adrenal medulla
Selective Against	Phenyl trimethyl ammonium (PTMA)	Dimethylphenyl piperazinium epibatidine (DMPP)
Selective antagonist	d-Tubocurarine α- bungarotoxin	Hexamethonium Trimetaphan
Function	Contraction of skeletal muscle	Transmission of impulse at autonomic ganglia, Release of catecholamines from Adrenal medulla and Excitation and inhabition of CNS

* Muscarinic term derived from "Muscarine" an active constituent of "toxic mushroom" (Amanita muscaria)"

Feature	M_1-Receptor	M_2	M_3
Distribution	Autonomic ganglia Gastric glands and CNS	Heart	Smooth muscles & exocrine glands
MOA by	Increase IP_3/ DAG Increase cytosolic Ca++	Decrease CAMP Increase K+ channel opening	Increase IP_3/ DAG Increase cytosolic Ca++
Against	Oxotremorine	Methacholine	Bethanechol
Antagonist	Pirenzepine Telenzepine	Methoctramine Tripitramine	Darifenacin
Function	CNS excitation	Negative chronotropic/ inotropic	Smooth muscle contraction and vasodilation

* Cholinergic drugs produce action similar to ACH
* Cholinomimetic (Muscarinic agonist) are used clinically mainly for their muscarinic receptor stimulation because they produce action at muscarinic receptors at much lower concentration than that needed to elicit nicotinic receptors

Cholinomimetics

Direct acting	Indirect acting / Acetylcholinesterase inhibitors
Esters	**Reversible**
1. ACH	1. Neostigmine
2. Bethanechol	2. Physostigmine
3. Carbachol	3. Pyridostigmine
4. Methacholine	4. Edrophonium
Alkaloids	5. Ambenonium
1. Nicotine	**Irreversible**
2. Arecoline	1. Malathion
3. Pilocarpine	2. Dichlorvos
4. Muscarine	3. Trichlorphon
	4. Echothiopate
	5. DIFP / DIPP

Antimuscarinic Drugs

Non-selective		Selective
Natural	**Semi synthetic and synthetic**	**Selective M_1 Receptor antagonist**
Atropine	**Mydriatics**	Pirenzepine
Hyoscine	Homatropine	Telezepine
(scopolamine)	Tropicamide	**Selective M_2**
	Cyclopentolate	Tripitramine
	Eucatropine	Methoctramine
	Antisecretory-antispasmodic	**Selective M_3**
	Oxyphenonium	Darifenacin
	Glycopyrronium	
	Dicyclomine	
	Propantheline	
	Isopropamide	
	Ipratropium	
	Oxybutynin	
	Flavoxate	
	Antiparkinsonians	
	Benzhexol	
	Benztropine	
	Procyclindine	

Adrenergic Agonist (Sympathomimetic)

Non selective	Selective
Catecholamines	**Selective α1**
Adrenaline	Phenylephrine
Noradrenaline	Methoxamine
Isoprenaline	**Selective α2**
Dopamine	Xylazine
Non-Catecholamines	Clonidine
Amphetamine	Detomidine
Ephedrine	**Selective β1**
Phenylpropanolamine	Dobutamine
Mephentermine	**Selective β2**
	Salbutamol
	Clenbuterol
	Terbutaline
	Orciprenaline

Anti-adrenergic drugs

(Mechanism of action – competitive antagonism with adrenergic receptors)

Non-selective		Selective	
Non-selective (α)	**Non-selective (β)**	**Selective α**	**Selective β**
Phenoxybenzamine	Propranolol	**Selective α1**	**Selective β1**
Phentolamine	Nadolol	Prazosin	Metoprolol
Ergotamine	Pindolol	Terazosin	Atenolol
Chlorpromazine	Timolol	Doxazosin	Esmolol
Haloperidol	Sotalol	Trimazosin	
Tolazoline		Indoramin	**Selective β2**
Dibenamine		Ketanserin	Butoxamine
Azapetine			
		Selective α2	
		Yohimbine	
		Atipamezole	

* Both α and β receptor antagonist

Labetalol
Carvediol
Dilevalol

Adrenergic Neuron acting drugs

Drugs	Example
Drugs that affect Nor adrenaline synthesis	Carbidopa α- Methyl- p-Tyrosine α- Methyl Dopa
Drugs that affect Nor adrenaline storage	Reserpine
Drugs that affect Nor adrenaline release	Guanethidine Reserpine Bretylium Guanadrel
Drugs that inhibit Nor adrenaline Reuptake	Cocaine (block Na^+-K^+ ATPase)

Skeletal muscle relaxants

Muscle Relaxants		
Peripherally acting		Centrally acting
Neuromuscular blocker	**Direct acting**	Diazepam
Non depolarising blocker	Dantrolene	Mephenesin
d- tubocurarine	Quinine	Gualphenesin
Pancuronium		Methocarbamol
Gallamine		Meprobamate
Doxacurium		Baclofen
Mivacurium		
Depolarising blocker		
Decamethonium		
Suxamethonium		

* Baclofen is a GABA derivative

* d-Tubocurarine is an imp constituent of curare , obtained from "chondodendron tomentosum" and "Strychnos toxifera"

* Hemicholinium – inhibit ACH synthesis

* Botulinum toxin – Inhibit ACH release

* Mechanism of action:-

1. Non-depolarising/competitive Neuro-muscular blocking agent combine with nicotine receptors in neuro-muscular junction and prevent the binding of acetyl choline leading to "flaccid paralysis"

2. Depolarising /Non-competitive Neuro-muscular blocking agent attach to the N_M receptors and act like acetylcholine to depolarise the post junction membrane they remain attached to the receptors for longer period of time leading to constant stimulation and this repetitive excitation cause flaccid paralysis

3. Direct acting muscle relaxant interfere with the release of Ca^{++} from sarcoplasmic reticulum

4. Centrally acting muscle relaxant act on internuncial spinal neurons and depress polysynaptic pathways which modulates reflexes maintaining muscle tone.

Myocardial stimulants

* They are positive inotropic drugs (increases strength of contractility and increases cardiac output)
* In each case the inotropic action is result of an increased cytoplasmic Ca^{++} concentration, that increase contractility of cardiac muscle_

Cardiac glycoside	Phosphodiesterase Inhibitors	β- adrenoceptor	Miscellaneous
Digitoxin Ouabain Bufotoxin	Aminophylline Theophylline Amrinone	Dobutamine Dopamine Isoprenaline Adrenaline	Calcium Glucagon

* Digitoxin is obtained from digitalis purpurea (Foxglove plant)
* Ouabain (Strophanthin G) is obtained from *Strophanthus gratus*
* Mechanism of action of cardiac glycosides: Glycosides bind to the K^+ binding site of the Na^+- K^+ ATPase and reversibly inhibit the Na^+-K^+ Pump leading to accumulation of Na^+ intracellularly and slowing of Ca^{++} extension resulting into increased release of Ca^{++} from sarcoplasmic reticulum hence increases contractility.

Antiarrhythmic drugs

Classification	Example
Class I / Na^+ channel blockers	Quinidine Procainamide Phenytoin Tocainide Lignocaine Flecainide
Class II / β adrenoceptor antagonist	Propranolol Sotalol Carazol
Class III/ K channel blockers	Amiodarone Bretylium
Class IV/ Ca^{++} channel blockers	Verapamil, Amlodipine, Nifedipine, Diltiazem (Latiazem)

Vasodilators

Basis of classification	Vasodilators	Example
Arterial vasodilators	Direct acting	Hydralazine, Diazoxide Minoxidil
	Ca^{++} channel blocker	Verapamil, Amlodipine, Nifedipine, Diltiazem (Latiazem)
	K^+ channel opener	Pinacidil
Mixed arterial and venous	Direct acting	Nitroprusside and Organic Nitrates
	Drugs acting of RAAS ACE Inhibitor	
	Angiotensin Receptor Antagonist	Captoprill, Enalpril, Benazepril, Ramipril Losartan
	Antiadrenergic drugs	α adrenoceptor antagonist Mixed α and β antagonist
	Miscellaneous	Xanthine, Papaverine

Diuretics

* Drugs that increase the amount of urine produced by kidneys

Basis of classification	Diuretics	Example
High efficacy diuretics	**High ceiling diuretics / loop diuretics** (Block the Na^+, K^+ -2 Cl symporter in thick ascending LOH)	Frusemide Bumetanide Ethacrynic acid
	Mercurial diuretics	Mersalyl
Moderate Efficacy diuretics	**Thiazide and Thiazide-like diuretics** (Inhibit Na^+ - Cl^- Co transport in distal tubule and decrease reabsorption of Na^+)	Chlorothiazide Chlorathlidone Xipamide
Low efficacy / Adjunctive diuretics	**Osmotic diuretics** (Inhibit passive reabsorption of H_2O)	Mannitol Glycerine Sorbitol
	Carbonic anhydrase inhibitor (Inhibit carbonic anhydrase at PCT and decrease the number of H^+ ions available for Na^+-H^+ exchange)	Acetazolamide Dichlorphenamide Methazolamide

	Potassium-sparing diuretics Renal epithelium Na^+ channels inhibitor Aldosterone receptor antagonist	 Amiloride, Triamterene Spironolactone
Miscellaneous Diuretics	Salts - Acidifying salts Alkalinising salts	Ammonium chloride and NaCl Potassium citrate and Potassium acetate
	Methylxanthines	Aminophylline and Theophylline

Multiple Choice Questions

1. Retardation of bone growth and discoloration/ hypoplasia of enamel is caused by

a. Lincomycin
b. Penicillin
c. Tetracyclin
d. Quinolone

2. Rifamycin act by

a. Bacterial cell wall formation
b. Impairing nucleic acid metabolism
c. Inhibiting protein synthesis
d. All of the above

3. Oil known for its drastic cathertic action is

a. Castor oil
b. Croton oil
c. Linseed oil
d. Turpentine oil

4. The macrocide antibiotics act by

a. Inhibiting protein synthesis
b. Inhibiting bacterial cell wall formation
c. Inhibiting DNA dependant RNA polymer
d. None of the above

5. Activity of aminoglycoside antibiotics is

a. Time dependent
b. Concentration dependent
c. Species dependent
d. Both a and b

6. A folic acid analogue commonly used for treatment of malignant lymphoma in dog is

a. Flurouracil
b. Mercaptopurine
c. Methotrixate
d. All of the above

7. A fungistatic and fungicidal antibiotic effective against *Candida albicans* is

a. Amphotericin
b. Candicidin
c. Nystatin
d. Griseofulvin

8. Oral antifungal fungistatic antibiotic agent is

a. Amphotericin
b. Nystatin
c. Tolnaftate
d. Griseofulvin

9. Benzoic acid and Salicylic acid helps in

a. Removing heavy keratin layer
b. Penetration of antifungal agent at the base of infection
c. Both a and b
d. Causing irritation and rubifacient effect

10. Action of Acetylcholine is terminated by

a. Domination
b. Hydrolysis
c. Diffusion away from the site of action
d. Temporary adsorption on plasma proteins

11. Adrenergic receptors in the heart are

a. Alpha receptors which cause increase in the heart rate
b. $Beta_2$ receptors which increase heart rate
c. $Beta_1$ receptors which cause increase in heart rate
d. $Beta_1$ receptors which cause decrease in heart rate

12. Drug of choice in the treatment of cardiac shock is

a. Dopamine
b. Metraminol
c. Propranolol
d. Phenoxybenzamine

13. Hexamethonium blocks the action of cholinergic drug at

a. Azonal transmission
b. Muscarinic receptor site
c. Neuromuscular junction
d. Autonomic ganglia

14. The drug of choice in the bronchial asthma is

a. Selective $beta_1$ agonist
b. Selective $beta_2$ antagonist
c. Selective $beta_2$ agonist
d. Selective $beta_1$ antagonist

15. Access of the toxin into the blood stream is called

a. Toxaemia
b. Infection
c. Infestation
d. None of the above

16. Rate limiting enzyme in the synthesis of norepinephrine is

a. Dopa decarboxylase
b. Tyrosine hydroxylase
c. Dopamine beta-hydroxylase
d. N-methyl transferase

17. Molds producing T-2 Toxin belongs to

a. Aspergillus spp. b. Atriplex spp.
c. Fusarium spp. d. Candida spp.

18. Tetrodotoxin and Saxitoxin

a. Selectively blocks the Na^+ axonal conduction
b. Selectively blocks the cholinergic receptors
c. Selectively blocks the re-uptake of Ach
d. Selectively blocks the Ach break-down

19. Plants causing Teratogenecity are

a. Datura alba b. Parthenum
c. Veratrum plants d. None of the above

20. A parasympathomimetic drug causes

a. Miosis, bradycardia, and bronchodilation
b. Miosis, bradycardia and bronchoconstriction
c. Mydriasis, bradycardia and bronchoconstriction
d. Miosis, tachycardia and bronchoconstriction

21. The venom of cobra and krait is mainly

a. Neurotoxic b. Haemotoxic
c. Hepatotoxic d. None of the above

22. Which one of the following has maximum CNS stimulant action?

a. d-amphetamine b. Adrenaline
c. l-amphetamine d. Isoprenaline

23. T-2 toxin causes

a. Toxicity of brain
b. Hepatic as well as renal toxicity
c. Toxicity to reproductive organs
d. Cardiac toxicity

24. Test used for the diagnosis of HCN in plant material is

a. Benedicts test
b. Barium chloride test
c. Sodium picrate paper test
d. None of the above

25. An anticholinergic drug is

a. Methscopolamine b. Glycopyrrolate
c. Propantheline d. All of the above

26. A cholinesterase reactive molecule is

a. Moxidectin b. Pralidoxime
c. Monensin d. Diminazine

27. Which of the following is not a cardiac glycoside?

a. Digitoxin b. Strophanthin
c. Cocaine d. Digoxin

28. Atropine is

a. An alkaloid
b. A steroid
c. A semisynthetic compound
d. An amino-acid derivative

29. Toxins causing lameness are

a. Ergotoxins
b. Slaframine and ergotoxins
c. Tremortin-A and satratoxins
d. None of the above

30. The potency of homatropine is

a. Equal to the potency of atropine
b. About one tenth of the atropine
c. About 10 times of the atropine
d. About 2 times of the atropine

31. Both alpha and beta adrenergic stimulation produces the same effect in

a. Blood vessels
b. Bronchial muscles
c. Intestine
d. Uterus

32. Long term therapy of enrofloxacin in adult cats result in

a. Blindness b. Liver failure
c. Lameness d. Gastroenteritis

33. A drug interacting with receptor but does not elicit the response is called

a. Agonist b. Antagonist
c. Placebo d. Orphan drug

34. Parenterally used drug for treating anaemia is

a. Iron dextran
b. Ferrous lactate
c. Ferric proteinate
d. All of the above

35. Zinc phosphide toxicity is due to

a. Zinc
b. Phosphine gas
c. Phosphoric acid
d. Phosphorous

36. A synthetic mydriatic agent is

a. Homatropine
b. Scopalamine
c. DFP
d. Atropine

37. Paraquat is a

a. Insecticide
b. Weedicide
c. Rodenticide
d. All of the above

38. The mechanism of action of amlodipine is

a. Inhibition of L-type Ca^{+2} channels
b. Inhibition of N-type Ca^{+2} channels
c. Blockade of Ca^{+2}- K^{+} ATPase
d. Activation of K^{+} channel

39. Drug that used to control cisplatin induced emesis is

a. Chlorpromazine
b. Ondansetron
c. Metoclopramide
d. Haloperidol

40. Bronchodilation is produced by

a. Salbutamol
b. Terbutaline
c. Aminophylline
d. All of the above

41. Relatively a COXspecific non-steroidal anti-inflammatory agent is

a. Aspirin
b. Nemesulide
c. Meloxicam
d. Rofecoxib

42. Phenylepherine is primarily a direct-acting sympathominetic amine at

a. α 1 receptor
b. α 2 receptor
c. β 1 receptor
d. β 2 receptor

43. One among these prevents the release of acetylcholine at neuromuscular junction

a. Nicotine
b. Botulinum
c. Chlorpromazine
d. Strychnine

44. Source of vincrystine and vinblastine is

a. Vinca rosea
b. Podophyllum peltatum
c. Lobelia inflata
d. Western yew tree

45. Lipid soluble drugs are absorbed from lipoidal membranes in the

a. Ionized form
b. Non ionized form
c. Pinocytosis
d. Active transport

46. An example for combination of agents inducing neuroleptanalgesia in animals is

a. Acepromazine and haloperidol
b. Chlorpromazine and ketamine
c. Droperidol and fentanyl citrate
d. Triflupromazine and fluanisone

47. Histamine produces uterine relaxation in

a. Monkey
b. Rat
c. Guinea pig
d. None of the above

48. The chemical constituent commonly found in the commercially available mosquito repellants is

a. Allethrin
b. Amitraz
c. Parathion
d. Bromadiolone

49. Aspirin act by

a. Blockade of platelet aggregation
b. Prevent Thromboxane A2 synthase formation
c. Increase in bleeding time
d. All of the above

50. Anti histamines that inhibits the release of histamine is

a. Astemazole
b. Diphenhydramine
c. Cromolyn
d. None of the above

51. Scorpion venom contains

a. Neurotoxic protein
b. Hepatotoxic protein
c. Haemotoxic protein
d. None of the above

52. A non-steroidal compound with anti-estrogenic effect is

a. Finasteride b. Flutamide
c. Tamoxifen citrate d. Diethyl stilbestrol

53. An example for pharmacokinetic incompatibility is

a. Aminoglycodsides with penicillin
b. Chloramphenicol with barbiturates
c. Fluroquinolones with penicillins
d. NSAIDS with macrolides

54. Gun metal kidney is seen in poisoning of

a. Arsenic b. Copper
c. Ferrous d. Phosphorus

55. Atropine in low concentrations blocks

a. Muscarnic receptor
b. Nicotinic receptor
c. Histaminic receptor
d. Both a and b

56. Most potent vasodilator is

a. PGE_2
b. PGF_2 Alpha
c. PGI_2
d. None of the above

57. Curare like effect is seen in bite of

a. Cobra
b. Krait
c. Pit viper
d. Both a and b

58. Pharmacologically active glycosides can be obtained from .....of the foxglove plant

a. Roots
b. Leaves
c. Stem
d. All of the above

59. Which statement is correct with respect to action of antibiotics on bacterial protein synthesis?

a. Chloramphenicol inhibits peptidyltransferase
b. Erythromycin inhibits 30S ribosomal activity
c. Lincomycin inhibits the formation of initiation complex
d. Streptomycin inhibits transpeptidation

60. Drug that is preferred in case of urinary bladder atony is

a. Carbachol
b. Bethanechol
c. Methacholine
d. All of the above

61. The mechanism of action of enrofloxacin involves

a. Inhibition of cell wall synthesis
b. Inhibition of protein synthesis
c. Inhibition of topo isomearse
d. Inhibition of xylose isomerase

62. The specific antidote of Iron dextran overdosage is

a. BAL
b. Penicillamine
c. Desferrioxamine
d. None of the above

63. The combination of drugs which give synergestic action is

a. Acetylcholine + Adrenaline combination
b. Na_2SO_4 + $MgSO_4$ combination
c. Tetracycline + $CaPO_4$
d. Sulfamethoxazole + Trimethoprim

64. Bulk purgatives act by

a. Decreasing the volume and increasing the viscosity of intestinal contents
b. Increasing the volume and increasing the viscosity of intestinal contents
c. Increasing the volumes and lowering the viscosity of intestinal contents
d. Decreasing the volume and lowering the viscosity of intestinal contents

65. The depth or level of anesthesia is better controlled with

a. Dissociative agents
b. Injectable anesthetics
c. Volatile liquids and gases
d. All of the above

66. H^+, K^+ ATPase inhibitor used in the treatment of peptic ulcers is

a. Cimetidine b. Lansoprazole
c. Misoprostol d. Metoprolol

67. Which of the following is not a colloidal plasma substitute?

a. Oxypolygelatin
b. Dextran
c. Dextrose
d. Hydroxyethyl starch

68. The drugs that is not used in treatment of peptic ulcer

a. Aspirin
b. Pirenzipine
c. Omeprazole
d. Sucralfate

69. Theobromine is

a. 1, 3, 7 trimethyl xantheine
b. 1, 3 dimethyl xanthine
c. 3, 7 dimethyl xanthine
d. 1, 7 dimethyl xanthine

70. 'Arthropathy' is one of the major side effects observed with

a. Aminoglycosides
b. Sulphonamides
c. Fluoroquinolones
d. Macrolids

71. The drug of choice for cardiogenic shock is

a. Adrenaline
b. Dopamine
c. Isoprenaline
d. Noradrenaline

72. The only known naturally occurring carbamate ester is

a. Eserine
b. Carabaryl
c. Octachlor
d. Sevin

73. Depth of anaesthesia is better controlled with

a. Dissociative agents
b. Gaseous inhalant anaesthetics
c. Injectable anaesthetics
d. All of the above

74. First antiretroviral agent discovered in the year is

a. Ramnatidine
b. Gancilovir
c. Zidovudine
d. Vidarabine

75. Aminoglycosides are administered

a. Orally only
b. Parentrally only
c. Topically
d. All of the above

76. Uptake of norepinephrine across the axoplasm is prevented by

a. Guanathidine
b. Tyramine
c. Imipramine
d. Reserpine

77. Absorption of a drug is favored by

a. Low ionization and high water solubility
b. Low ionization and high lipid solubility
c. High ionization and low lipid solubility
d. High ionization and high water solubility

78. Zidovudine has antiviral activity against

a. HIV 1, 2
b. Leukemia
c. Both a and b
d. None of these

79. Which of the following is a systemic antacid?

a. Magnesium oxide
b. Sodium bi-carbonate
c. Magnesium hydroxide
d. Calcium carbonate

80. An example of liquid alkaloid is

a. Atropine
b. Arecoline
c. Hyoscine
d. Pilocarpine

81. The cobalt deficiency anaemia is called as

a. Bush sickness
b. Pine
c. Nakururitis
d. All of the above

82. Posology deals with

a. Dosage
b. Dosage forms
c. Source
d. Weights and measures

83. An alkalinizing effect is observed in

a. Darrow's solution
b. Soda-bi-carb solution
c. Ringer's lactate solution
d. All of the above

84. The mycotoxin which primarily affects the kidneys is

a. Aflatoxin
b. Ototoxin
c. Ochratoxin
d. Rubratoxin

85. Example of drastic purgative is

a. Castor oil
b. Glycerin
c. Barium chloride
d. Magnesium sulphate

86. Drug that suppresses prolactin secretion is

a. Bromocriptine
b. Metoclopramide
c. Reserpine
d. All of the above

87. Which one of the following is a blistering agent?

a. Yellow oxide of mercury
b. Red iodide of mercury
c. Mercurochrome
d. All of the above

88. Dose of magnesium sulphate as a purgative in cattle is

a. 5 gm b. 50 gm
c. 500 gm d. None of the above

89. A gut acting sulphonamide is

a. Sulfisoxazole b. Sulphamethoxazole
c. Sulphaguanidine d. Sulphacetamide

90. Endosulphan insecticide is an example of

a. Cyclodiene b. Carbamate
c. Pyrethroid d. Organophosphate

91. The cephalosporin antidote with methylthiotetrazole side chain that cause bleeding and disulfiram like effect is

a. Cephalexin b. Cefoxitin
c. Cefotaxime d. Cefamandole

92. Anticancer drug widely used in the treatment of solid tumor in dogs and cats is

a. Thiotepa b. Busulphan
c. Methotrixate d. Vincrystine

93. Oxalate rich plant is

a. Lantana camara
b. Beta vulgaris
c. Hypericum perforatum
d. Parthenium hysterophorus

94. Lead lines are observed during chronic lead toxicity on

a. Tooth b. Enamel
c. Gums d. Long bones

95. The antibiotic used for the prophylaxis of infections with chloroquine resistant strains of *P. Falciparum* is

a. Doxycycline b. Clarithromycin
c. Sulfadoxine d. Cipprofloxacin

96. Synthetic antiviral guanosine analog is

a. Acyclovir b. Vidarabine
c. Idoxuridine d. Tribavirin

97. Neostigmine is indicated in

a. Bronchoconstriction b. Ruminal atony
c. Diarrhoea d. Miosis

98. Elongation of hooves along with spontaneous fracture is characteristic of

a. Selenosis
b. Fluorosis
c. Phosphorus poisoning
d. Arsenic poisoning

99. The antidote for copper toxicity is

a. Dimercaprol
b. BAL
c. D-Penicillamine
d. Protamine sulphate

100. Which of the following is/are catecholamine transmitters

a. Epinephrine b. Norepinephrine
c. Dopamine d. All of the above

101. "Steep dose response curve" is seen in

a. Abrus Precatorius poisoning
b. Croton tiglium poisoning
c. Strychnus nuxvomica poisoning
d. Senecio jacobae poisoning

102. The topical agent used against *Candida albicans* is

a. Clotrimazole b. Sodium iodide
c. Caspofungin d. Cotrimoxazole

103. MAO and COMT are involved in enzymatic breakdown of

a. Acetylcholine
b. Catecholamines
c. Non Catecholamines
d. All of the above

104. A dopamine antagonist which act as antiemetic and prokinetic drug is

a. Cisapride b. Ranitidine
c. Metaclopramide d. Xylazine

105. Sulphonamide of choice for the treatment of urinary tract infection is

a. Sulfisoxazole
b. Sulphadiazine
c. Sulphaethoxypyridazine
d. Sulphaguanidine

106. The anti-inflammatory effect of meloxicam is is due to its ability to inhibit

a. Preferentially COX1
b. Preferentially COX2
c. COX1 & COX2 equipotently
d. Lipooxygenase (LOX)

107. The bactericidal action of cephalosporin group is due to inhibition of

a. Cell wall synthesis
b. Ion transport
c. Protein synthesis
d. DNA replication

108. Proton pump (H+) blocker prescribed in gastric ulcer is

a. Metaclopramide b. Mesoprostol
c. Omeprazole d. Sucralfate

109. Concomittant therapy of Zalcitabine and Zidovidine is recommended in

a. HIV infection b. Measles
c. Viral meningitis d. SARS

110. An antifungal agent that inhibit steroid synthesis is

a. Amphotericin b. Clotrimazole
c. Griseofulvin d. Ketoconazole

111. The antiseptic action of potassium permanganate is due to

a. Astringent b. Oxidising action
c. Reducing action d. Antioxidant

112. First antiviral agent used in clinical practice is

a. Citarabine b. Ganciclovir
c. Idoxuridine d. Rimantadine

113. Lignocaine acts by

a. Blocking sodium channel
b. Inhibiting magnesium channel
c. Stimulating sodium channel
d. Blocking calcium channel

114. Epsom salt has the pharmacological action of

a. Adsorbent b. Antidiarrhoeal
c. Purgative d. Bronchodilator

115. Stanozolol is

a. An antiemetic
b. An appetite stimulant
c. Haemostatic
d. Diuretic

116. The purpose of using clavulanic acid in combination with amoxicillin is to

a. Delay the excretion of amoxicliin
b. Inhibit the beta lactamase
c. Enhance the spectrum of clavulanic acid
d. To delay the absorption of amoxicillin

117. "Sequential double blockade" term associated with the action of

a. Cyclophosphamide
b. Sulphamethoxazole
c. Chlortetracycline
d. Quinapyramine

118. The branch of pharmacology that deals with the study of sources of drugs is

a. Pharmacognosy
b. Posology
c. Pharmacy
d. Pharmacovigilance

119. Most common anticholinergic agent in the prevention and treatment of motion sickness is

a. Scopolamine b. Cyclizine
c. Domperidone d. Metoclopramide

120. Carbon tetrachloride is primarily a

a. Haematotoxicant b. Nephrotoxicant
c. Hepatotoxicant d. Neurotoxicant

121. A potassium sparing diuretic is

a. Acetazolamide b. Furesemide
c. Triamterine d. Thiazide

122. The usage of broad spectrum antibacterials may result in

a. Nosocomial infections
b. Super infections
c. Iatrogenic infections
d. Subclinical infections

123. Lisinopril acts by

a. Antagonizing calcium channels
b. Antagonizing potassium channels
c. Inhibiting angiotensin II formation
d. Inhibiting angiotensin III formation

124. Amantadine and rimantadine are indicated for prophylaxis and treatment of

a. Viral influenza b. Chicken pox
c. Viral encephalitis d. All of these

125. A cyanogenetic glycoside present in sorghum is

a. Amygdaline b. Dhurrin
c. Linamerin d. Lotaustralin

126. The PABA antagonist that has bacteriostatic action against *Mycobacterium leprae* is

a. Dapsone b. Sulfadoxine
c. Sulfaquinoxaline d. Sulfamethoxazole

127. Death from organophosphorus toxicity is mainly due to

a. Cardiac failure
b. Respiratory failure
c. Renal failure
d. Pulmonary edema

128. Kernicterus a side effect of drug in newly born infants observed in the therapy of

a. Chloramphenicol b. Sulfonamide
c. Tetracycline d. Quinolone

129. The receptors for steroid hormones are located in

a. Plasma membrane
b. Cytoplasm
c. Mitochondria
d. Smooth endoplasmic reticulum

130. Safest tetracycline for the treatment of extra renal infection in patients with renal failure is

a. Tetracycline b. Minocycline
c. Doxycycline d. Oxytetracycline

131. The action of cardiac glycosides is to

a. Inhibit H^+ K^+ ATPase
b. Stimulate Na^+ K^+ ATPase
c. Stimulate H^+ K^+ ATPase
d. Inhibit Na^+ K^+ ATPase

132. Depolarizing neuromuscular blocking drug used for skeletal muscle relaxation is

a. D-tubocurarine b. Suxamethonium
c. Vancuronium d. Gallamine

133. Colour of the blood in cyanide toxicity is

a. Blackish b. Cherry red
c. Chocolate brown d. Dark green

134. M1 receptor antagonist that suppress neural stimulation of acid production is

a. Atropine b. Protriptyline
c. Pirenzipine d. Omeprazole

135. The cholinomimetic alkaloid used for its anticestodal action is

a. Arecholine b. Neostigmine
c. Pilocarpine d. Muscarine

136. 'Universal antidote' consists of activated charcoal, magnesium oxide and

a. Egg white b. Milk
c. Liquid paraffin d. Tannins

137. A poison that causes respiratory insufficiency by hindering oxygen uptake from pulmonary alveoli is

a. ANTU
b. CO
c. Cyanide
d. Chlorophenol

138. An anti-diabetic drug that selectively blocks the inward rectifying potassium channels is

a. Amiloride
b. Vincristine
c. Sulfonylurea
d. Verapamil

139. The measure of margin of safety of a drug is obtained by

a. LD 50/ ED 99
b. LD 50/ ED 50
c. ED 50/ LD 50
d. LD 1/ ED 99

140. First pass effect for most of the drugs occurs in

a. Tongue
b. Oral mucosa
c. Intestine
d. Rectum

141. The effect of dobutamine on heart is

a. Increased heart rate
b. Increased conduction of impulses
c. Increased force of contraction
d. Decreased conduction of impulses

142. Minimata disease is related to toxicity of

a. Cadmium
b. Copper
c. Methyl mercury
d. Lead

143. A cytotoxic antibiotic is

a. Ciprofloxacin
b. Actinomycin-D
c. Chloramphenicol
d. Fluoxetine

144. The antiseptic with antifungal action is

a. Benzoyl peroxide
b. Cetrimide
c. Povidone iodine
d. Potassium permanganate

145. The diuretic which acts by antagonizing aldosterone is

a. Frusemide
b. Spironolactone
c. Chlorothiazide
d. Amiloride

146. Rapid intravenous injection of serotonin produces

a. Hypotension
b. Triphasic response
c. Anaphylaxis
d. Triple response

147. Acidic drugs are mostly bind to

a. Albumin
b. Lipoprotein
c. Transferrin
d. None of the above

148. A beta blocker used as an antiarrhythmic agent is

a. Verapamil
b. Phentolamine
c. Propranolol
d. Nifedipine

149. A selective AT1 antagonist is

a. Losartan
b. Captopril
c. Saralasin acetate
d. Enalapril

150. Acyclovir inhibit viral DNA synthesis by inhibiting

a. DNA gyrase
b. DNA polymerase
c. DNA chain elongation
d. All of the above

151. An anticoccidial approved for use in layers is

a. Amprolium
b. Monensin
c. Robenidine
d. Nicarbazin

152. Biological activity of interferon is measured in terms of

a. mg/ kg
b. ppm
c. IU (International Unit)
d. cc

153. Which of the following is a aldosterone inhibitor

a. Amrinone
b. Acetylcysteine
c. Triamterine
d. Spironolactone

154. Vincristin sulphate is

a. An anticanerous antibiotic
b. Cytotoxic drug
c. Administered intramuscularly
d. An inhibitor of macrotubules

155. An antifungal antibiotic is

a. Ampicillin
b. Neomycin
c. Lincomycin
d. Amphotericine B

156. Sui poisoning is caused by

a. Areca catechu
b. Abrus precatorius
c. Acacia leucophloea
d. Argemone mexicana

157. Acetylcholinesterase (AChE) enzyme is relatively rich in the venom of

a. Russell's viper b. Cobra
c. Common krait d. Pit vipers

158. The enzyme present in the animal body which converts cyanide to much less toxic cyanate is

a. Catalase
b. Cytochrome oxidase
c. Rhodanase
d. None of the above

159. Dose of Atropine in O.P. poisoning can be reduced by simultaneous administration of

a. Calcium b. 2-PAM
c. Coramine d. EDTA

160. Penetration of drug in to infected CNS foci almost always depends on

a. Active transport
b. Passive diffusion
c. Facilitated transport
d. All of the above

161. The minimum drug concentration attained at the infected site should be approximately equal to

a. MAC b. MBC
c. MIC d. None of the above

162. The antiviral agent that inhibits the viral M2 protein ion channel is

a. Amantadine b. Ganciclovir
c. Ribavarin d. Oseltamivir

163. Antiviral action of ganciclovir is due to

a. Inhibition of viral DNA synthesis
b. Cessation of DNA chain elongation
c. Both a and b
d. None of the above

164. An analog of diclofenac with selective COX2 inhibition property is

a. Meloxicam b. Lumiracoxib
c. Nimesulide d. Rofecoxib

165. A safety measure which includes consideration of steepness of Log D-R curve is

a. ED50
b. Therapeutic ratio
c. Therapeutic index
d. Efficacy

166. Site of action of penicillinase is

a. Betalactum ring
b. Thiazolidine ring
c. Side chain
d. All of the above

167. Neuromuscular blockage with tubocurarine can be overcome by

a. Acetyl choline
b. Bethanacol
c. Neostigmine
d. None of the above

168. Phase I biotransformation reactions involve all except

a. Hydroxylation
b. Acetylation
c. Oxidation
d. Reduction

169. Ketamine produces

a. Catalepsy
b. Dissociative anaesthesia
c. Marked analgesia
d. All of the above

170. Drug of choice for arsenic poisoning is

a. Ca disodium EDTA
b. Dimercaprol
c. Methylene blue
d. Sodium thiosulphate

171. Protamine sulphate is a

a. Fibrinolytic agent
b. Heparin antagonist
c. Antiplatelet drug
d. Warfarin antagonist

172. The antibacterial agent effective against *Mycobacterium bovis* is

a. Streptomycin
b. Tiamulin
c. Tinidazole
d. Tylosin

173. Suicidal inhibitor of betalactamase is

a. Aztreonam
b. Imipenem
c. Clavulanic acid
d. Monolactam

174. A antibiotic therapy of meningitis in animal may be more effective after

a. Concurrent dosing
b. Pulse dosing
c. Subsequent dosing
d. None of the above

175. First quinolone synthesised is

a. Cinoxacin
b. Nalidixic acid
c. Norfloxacin
d. None of the above

176. Morphine produces CNS stimulation

a. In bovines
b. In dogs
c. In cats
d. None of the above

177. Systemically administered first antiviral agent is

a. Ganciclovir
b. Zidovudine
c. Vidarabine
d. None of the above

178. Doxapram is a

a. Analeptic agent
b. Antiepileptic drug
c. Cataleptic agent
d. Muscle relaxant

179. The best example for congenital photosensitivity is

a. Albinism
b. Plumbism
c. Porphyria
d. Lantana

180. The most potent cardiac glycoside is

a. Digoxin
b. Digitoxin
c. Gitoxin
d. Oubain

181. The most potent fraction of aflatoxin is

a. G1
b. B1
c. M2
d. None of the above

182. 'Epinephrine reversal' phenomenon is associated with

a. Tropane alkaloids
b. Ergot alkaloids
c. Methylxanthins
d. Tricyclic antideprasents

183. DNA-dependent RNA polymerase in prokaryotic cells is inhibited by

a. Polymixin-B
b. Bacitracin
c. Azithromycin
d. Rifampicin

184. The sub acute selenium toxicity is termed as

a. Blind staggers
b. Pine
c. Limber neck
d. Burtons line

185. 'Grey baby syndrome' is the adverse effect of

a. Kanamycin
b. Cycloserine
c. Chloramphenicol
d. Oxytetracycline

186. Rule out one which is not a mucolytic expectorant

a. Acetyl cysteine
b. Guaiacol
c. Bromhexine
d. Dembrexine

187. Loss of hairs in mane and tail of horses is associated with the toxicity of

a. As
b. Cu
c. Pb
d. Se

188. The 'time lag' for the drug to fall one-half of the original concentration in plasma is called

a. Half-life (t1/2ß)
b. Bioavailability (F)
c. Duration of action (Td)
d. Clearance (ClB)

189. "Bovine enzootic hematuria" is associated with

a. Strycnus Nuxvomica poisoning
b. Bracken fern poisoning
c. Lathyrism
d. Horse tail poisoning

190. "Cherry red colored blood" is seen in

a. Nitrate poisoning
b. Cyanide poisoning
c. CO poisoning
d. CO_2 poisoning

191. The 'cherry red' colour of blood is observed in cyanide poisoning due to

a. Haemolytic crisis
b. Hyperoxygenation of blood
c. Methaemoglobenemia
d. Carboxyhaemoglobin

192. Enzootic ataxia and sway back in ewes is associated with

a. As poisoning b. Cu poisoning
c. Mo poisoning d. Se poisoning

193. A competitive antagonist of benzodiazepine receptor is

a. 4-aminopyridine b. Gabapentin
c. Yohimbin d. Flumazenil

194. The mathematical description of changes in concentration of drugs or their metabolites in body is called

a. Pharmacometrics b. Pharamcokinetics
c. Chronopharmacology d. Pharmacodynamics

195. One of the following is a pyrethroid compound

a. Parathion b. Warfarin
c. Cypermethrin d. Endosulfon

196. The receptors for glycoprotein hormones are located in

a. Nucleus b. Mitochondria
c. Plasma membranes d. EPR

197. Cytochrome- Penzymes is inhibited by

a. Amoxicillin b. Amikacin
c. Ketoconazole d. Levamisole

198. A macrolide compound contraindicated in *Collie* and its cross bred dogs is

a. Closantel b. Ivermectin
c. Levamisole d. Praziquantel

199. An active principle present in *rhizomes* of turmeric plant is

a. Curcumin b. Piperine
c. Azadirachtin d. Quercetin

200. The antidote for carbaryl toxicity is

a. Atropine b. BAL
c. 2-PAM d. DAM

201. Reversible blockade of AChE is caused by

a. OPI b. OCI
c. Carbamate d. Pyrethroids

202. "Suicidal transport" is associated with the following poisoning

a. Abrus Precatorius
b. Croton tiglium
c. Lathyrism
d. Senecio jacobae

203. "Periodic intermittent shifting lameness" is seen in

a. F toxicity b. As toxicity
c. Cu toxicity d. Hg toxicity

204. Non-specific binding protein for metals is

a. Metallothioniens b. Albumin
c. Ferritin d. Transferrin

205. BAL is the specific antidote for

a. As b. Cu
c. Pb d. Se

206. An agent which cause relaxation of uterus is

a. Oxytocin
b. Isoxsuprine
c. Tiaprost
d. Phenoxybenzamine

207. The parasympatholytic agent used for the opthalmological examinations is

a. Pilocarpine
b. Scopalamine
c. Cyclopentolate
d. Ephedrine

208. The parasympatholytic agent commonly used to block the vagal reflexes is

a. Digoxin
b. Propranolol
c. Glycopyrrolate
d. Scopolamine

209. Diuretic which inhibits carbonic anhydrase is

a. Acetazolamide
b. Chlorothiazide
c. Furosemide
d. All of the above

210. An example for the dopamine agonist is

a. Acepromazine
b. Bromocriptine
c. Domperidone
d. Droperidol

211. The antidote for nitrate toxicity in cattle is

a. Methylene blue
b. Calcium disodium EDTA
c. Desferroxamine
d. Sodium thiosulphate

212. The toxic principle present in castor bean is

a. Ricin
b. Abrin
c. Gossypol
d. Sanguinin

213. An OPC (anticholinesterase agent) used as an Ectoparasiticidal agent is

a. Malathion
b. Echothiopate
c. Parathion
d. Dichlorovos

214. The antiemetic agent preferred for controlling the motion sickness in animals is

a. Promethazine
b. Pheneramine maleate
c. Sodium bicarbonate
d. Granisetron

215. A sulponamide which is used for the treatment of burns is

a. Sulphacetamide
b. Sulphadimidine
c. Silver sulphadiazine
d. Sulphanilamide

216. ..... is used as a synthetic genglionic stimulant

a. Tetramethylamonium
b. Hexamethonium
c. Atropine
d. Homatropine

217. "Black berry jam spleen" is associated with the poisoning of

a. As
b. Cu
c. Hg
d. Pb

218. The first hormone synthesized in the laboratory is

a. Insulin
b. Thyroxine
c. Glucagon
d. Parathormone

219. The plant rich in cyanogenic glycosides is

a. Lucerne
b. Tapioca
c. Cotton plant
d. Poppy plant

220. Quinolones developed for Veterinary use are

a. Enrofloxacin and ciprofloxacin
b. Danofloxacin and enrofloxacin
c. Enrofloxacin and norfloxacin
d. Norfloxacin and danofloxacin

221. "Pacing gait and spectacled appearance" is seen in

a. As poisoning
b. Cu poisoning
c. Se poisoning
d. Mo poisoning

222. A potent microsomal enzyme inhibitor is

a. Apramycin
b. Azithromycin
c. Ciprofloxacin
d. Chloramphenicol

223. Which of the following is a mood stabilizer

a. Chlorpromazine
b. Lithium carbonate
c. Phenobarbitone
d. All of the above

224. Acetylation of amino group is deficient in

a. Cat b. Dog
c. Horse d. Pig

225. Angiotensin converting enzyme is inhibited by

a. Losartan b. Captopril
c. Nifedipine d. All the above

226. Lindane toxicity is treated by the administration of

a. Dimercaprol b. d-penicillamine
c. Phenobarbitone d. Scopolamine

227. Topically used sulfonamide for ophthalmic infections is

a. Sulphacetamide b. Sulfadiazine
c. Sulphathiazole d. Sulphapyridine

228. Antimicrobial therapy in immunocompetant host is merely

a. Bactericidal b. Bacteriostatic
c. Both a & b d. None of these

229. Bitter almond smell of the gastrointestinal contents is observed in

a. Cyanide poisoning
b. Mercury poisoning
c. Phosphorous poisoning
d. Selenium poisoning

230. In ruminants blue-green coloured faeces is indicative of ..... poisoning

a. Lead b. Copper
c. Mercury d. Selenium

231. The biochemical mechanism responsible for death from cyanide poisoning involves

a. Inhibition of cytochrome oxidase
b. Formation of methahemoglobin
c. Formation of carboxyhemoglobin
d. Inhibition of cytochrome C

232. Species highly susceptible for zearalenone toxicity is

a. Bovine b. Caprine
c. Equines d. Porcine

233. Ephedrine is an example of

a. α_1 adreno receptors agonist
b. α_2 adreno receptors agonist
c. Both α and β agonist
d. None of the above

234. Imidazole derivative used as an injectable anesthetic in pigs is

a. Alphaxalone b. Metomidate
c. Minaxolone d. All of the above

235. The fungus causing secondary photosensitization in animals is

a. Aspergillus spp.
b. Microsporium spp.
c. Pithomyces spp.
d. Trichophyton spp.

236. Stertorous sounds due to laryngeal hemiplegia in horses is associated with the following poisoning

a. As b. Se
c. Mo d. Pb

237. The pre-systemic metabolism of drug before reaching systemic circulation is called

a. First-pass effect
b. Functional metabolism
c. Lethal synthesis
d. Synthetic metabolism

238. Irreversible blockade of AChE is caused by

a. Carbamat b. OPI
c. OCI d. Pyrethroids

239. The drug of choice for treating acute nitrite toxicity in farm animals is

a. Calcium sodium EDTA
b. Trypan blue
c. Methylene blue
d. Sodium thiosulfate

240. "Secondary photosensitization" is caused by

a. Lathyrus odoratus
b. Strycnus Nuxvomica
c. Senecio jacobae
d. Lantana camera

241. "Radiomimetic disease" in cattle and sheep is also known as

a. Strycnus Nuxvomica poisoning
b. Bracken fern poisoning
c. Lathyrism
d. Horse tail poisoning

242. Bactericidal activity of methylene blue was first investigated by

a. Alexander flaming
b. Pasture and Jobert
c. Paul Ehrlich
d. Dugger

243. An example of drug undergoing 'acetylation' biotransformation reaction is

a. Ampicillin
b. Meloxicam
c. Paracetamol
d. Sulphadimidine

244. An example for "lethal synthesis" is the conversion of

a. Codeine to morphine
b. Parathion to paraoxon
c. Phenylbutazone to oxtphenbutazone
d. Vitamin K to vitamin K epoxide

245. Area under the curve (AUC) denotes the value of

a. Bioavailability of the drug
b. Half-life of the drug
c. Volume of distribution of the drug
d. Maximum plasma concentration of the drug

246. Non sedative antitussive is

a. Dextromethorphan
b. Codeine
c. Dihydrocodeine
d. Diamorphine

247. The antidote for paracetomol toxicity in cats is

a. N- methyl glycine
b. N-acetyl cysteine
c. N-acetyl methionine
d. N-methyl guanine

248. Zearalenone is a

a. Phytoestrogen
b. Steroidal antiestrogen
c. Steroidal estrogenic
d. Non-steroidal estrogenic

249. Mucolytic expectorant preferred in equines is

a. Dembrexine
b. Ambroxol
c. Bromhexine
d. All of the above

250. An anthelmentic drug which produces its effect by prevention of energy production in the helminths is

a. Albendazole
b. Mebendazol
c. Febental
d. Flubendazole

251. Vacomycin is produced by

a. Streptomces venezulae
b. Streptomyces orientalis
c. Streptomyces griseus
d. Streptomyces rimosus

252. Organochlorine which is least soluble in body fat is

a. DDT
b. Dieldrin
c. Lindane
d. Methoxychlor

253. "Hemolytic crisis" is associated with the poisoning of

a. As
b. Cu
c. Hg
d. Se

254. Bacitracin acts by

a. Inhibiting nucleic acid metabolism
b. Inhibiting bacterial cell wall formation
c. Inhibiting proteins synthesis
d. All of the above

255. "Irreversible cerebral edema" is associated with

a. CO poisoning
b. Nitrate poisoning
c. Cyanide poisoning
d. Salt poisoning

256. "Grunwald test" is used for

a. Pb toxicity
b. As toxicity
c. Cu toxicity
d. Hg toxicity

257. The enzyme aconitase is inhibited by

a. F
b. As
c. Cu
d. Hg

258. "Garlic like odour" of gastric content is associated with

a. As toxicity b. Cu toxicity
c. Pb toxicity d. P toxicity

259. The combination of drugs which causes pharmacological antagonism is

a. Histamine and Epinephrine
b. Histamine and Pheniramine maleate
c. Heparine and Protamine
d. None of the above'

260. The drug that is preferred for the treatment of post partum hemorrhage is

a. Bromocriptine b. Cloprostenol
c. Ergonovine d. Oxytocin

261. The effect of metformin is

a. Increased insulin release
b. Increased blood glucose level
c. Reduced insulin release
d. Reduced blood glucose levels

262. Hypokalemia is an adverse effect of

a. Chlorpheneramine maleate
b. Ethacrynic acid
c. Spironolactone
d. Ranitidine

263. Source of oxytetracycline antibiotic is

a. Streptomyces aureofaciens
b. Streptomyces griseous
c. Streptomyces rimosus
d. Streptomyces fradiae

264. Mottling and patchy loss of dentine appearance of teeth is observed due to toxicity of

a. Copper b. Zinc
c. Fluoride d. Iron

265. Minimum dose of a drug producing desired response is called

a. Ceiling dose
b. Threshold dose
c. Both a and b
d. None of the above

266. Potassium iodide is an example of ..... expectorant

a. Direct acting b. Saline type
c. Reflex acting d. None of the above

267. Therapeutic effect of ketoconazole is antagonized by

a. Amphotericin b. Candidicin
c. Nystatin d. Griseofulvin

268. Treatment by which toxicity of acidic or basic drugs can be minimized is

a. Antidote therapy b. Chelation
c. Neutralisation d. Ion trapping

269. The following is the toxic ratio of molybdenum: copper in the body

a. > 2:1 b. 6:1
c. < 2:1 d. 12:2

270. Selenium is competitive inhibitor for one of the following heavy metal

a. Pb b. As
c. Cu d. Hg

271. Lindane is an example of

a. Carbamate b. Organochlorine
c. Organophosphate d. Formamidine

272. The most effective drug combination for tuberculosis is

a. Aminosalicylic acid and Cycloserine
b. Isoniazid and rifampin
c. Pyrazinamide and ethionamide
d. Streptomycin and ethambutol

273. Antagonist

a. Have a zero efficacy
b. Have a high efficacy
c. Have an intermediate efficacy
d. Have both intrinsic activity and affinity

274. Choline esterase reactivators are useful in the poisoning of

a. Carbamates b. Organochlorines
c. Organophosphates d. Pyrethroids

275. "Rose budding" toxic effect in pigs is produced by

a. Erythromycin b. Chloramphenicol
c. Spiramycin d. Tylosin

276. High dietary fat intake enhances oral absorption of

a. Cuprimycin b. Griseofulvin
c. Ketconazole d. Tolnaftate

277. Combination of sulphonamides with trimethoprim results in

a. Synergistic effect
b. Additive effect
c. Antagonistic effect
d. Potentiating effect

278. An antimineralocorticoid diuretic is

a. Aldosterone
b. Deoxycorticosterone
c. Furosemide
d. Spiranolactone

279. Oral administration of penicillin G decreases absorption of

a. Amphotericin
b. Gresiofulvin
c. Ketoconazole
d. All of the above

280. The following drug suppresses the cough directly

a. Ammonium carbonate
b. Dextromethorphan
c. Potassium iodide
d. All of the above

281. β2 receptor agonist used for uterine relaxation is

a. Ritodrine b. Oxytocin
c. Ergometrine d. All of the above

282. ALA-D is the sensitive indicator of ..... poisoning

a. Fluorine
b. Lead
c. Selinium
d. Organochlorine

283. Widely used anticancer drug used in combination with other drugs in veterinary medicine is

a. Mustin b. 5-flurouracil
c. Cyclophosphamide d. None of these

284. Organochlorine compounds act by competitive inhibition of the binding with

a. GABA b. Aspartate
c. Glycine d. Glutamate

285. Drug which exerts anti-peptic ulcer effects through inhibition of proton pump is

a. Sucralfate b. Lansoprazole
c. Misoprostol d. Ranitidine

286. Cyproheptadine is a

a. Histamine antagonist
b. Serotonin antagonist
c. Both a and b
d. None of the above

287. Cancer chemotherapy is ideal for treatment of

a. Disseminated cancer
b. Generalized neoplasm
c. Localized tumor
d. All of the above

288. The specific antagonist of morphine is

a. Atropine b. Naloxon
c. Bemigride d. Yohimbine

289. A cholinergic drug used in ruminal atony is

a. Carbachol
b. Nor adrenaline
c. Methacholine
d. Acetylcholine

290. Alopecia with continuous hair growth is common sequale with

a. Methotrixate b. Flurouracil
c. Mercaptopurine d. Cyclophosphamide

291. Verapamil is a ..... channels blocker

a. Calcium b. Potassium
c. Sodium d. All of the above

292. Antagonist of warfarin is

a. Phytomenadione b. Protamine sulfate
c. Clopidogrel d. Ethamsylate

293. Which of the following is a CNS depressant

a. Methoxychlor b. Bromadiolone
c. Deltamethrin d. HCN

294. Animals generally "rooted at one spot" in the poisoning of

a. Cu b. As
c. Se d. Hg

295. Dimercaptosuccinic acid is the chelating agent for

a. Copper b. Selenium
c. Iron d. Lead

296. In the secretary granule insulin is complexed with

a. Ca^{++} b. Cu^{++}
c. Fe^{++} d. Zn^{++}

297. Drug of choice for treatment of methicillin resistant *Staphylococcus aureus* is

a. Amoxicillin b. Ceftriaxone
c. Piperacillin d. Vancomycin

298. Glucuronide conjugation is absent in

a. Cats b. Dogs
c. Horses d. Pigs

299. Quinolone antibiotic exert its antimicrobial action through

a. Incorporation in to the nucleic materials
b. Inhiting DNA gyrase
c. Inhibiting DNA dependent RNA polymerase
d. None of the above

300. The mediator of Renshaw cell is

a. Glycine b. Acetyl choline
c. GABA d. Nor adrenaline

301. Anticancer drug has special affinity for B cells of islets of langerhans

a. Daunarubicin b. Dactinomycin
c. Streptozotocin d. Bleomycin

302. The presence of 'long rocker shaped hoof' is a characteristic of poisoning with

a. Arsenic b. Copper
c. Selenium d. Lead

303. Mechanism of antiretroviral agents exerted through

a. Inhibition of DNA gyrase
b. Inhibiting RNA dependent DNA polymerase
c. Inhibition of thiamidine kinase
d. All of the above

304. Fatty acids such as undecylenic acid, caprylic acid and propionic acid possess

a. Keratolytic effect
b. Fungicidal effect
c. Fungistatic effect
d. All of the above

305. An anticoccidial drug that acts by inhibiting thiamine uptake is

a. Furazolidone
b. Sulfadimethoxine
c. Nicarbazin
d. Amprolium

306. Anticancer drugs are dosed on the basis of

a. Surface area
b. Total body mass
c. Both a and b
d. None of the above

307. The enzyme inhibited by fluoroacetate in TCA cycle is

a. Malic dehydrogenase
b. Succinic dehydrogenase
c. Aconitase
d. Fumerate reductase

308. In swine "Zeralenone" a mycotoxin produces

a. Muscular dystrophy b. Ototoxicity
c. Nephrotoxicity d. Vulvar prolapse

309. Zidovidine selectively attack HIV due to its affinity for

a. Transaminase b. Transcriptase
c. Transpeptidase d. None of the above

310. Cancer therapy was first successfully practiced with the use of

a. Chlorambucil b. Vinca alkaloid
c. Nitrogen mustard d. All of the above

311. Chronic copper poisoning is more prevalent in

a. Chicken b. Dog
c. Sheep d. Pig

312. Antibiotic antifungal drug isolated from strain of *Streptomyces noduses* is

a. Amphotericin b. Flucytocin
c. Nystatin d. Griseofulvin

313. Concurrent administration of ketoconazole and amphotericin B is contraindicated in.....infection

a. Bacterial b. Fungal
c. Viral d. Parasitic

314. HHistamine receptor blocker is

a. Phentolamine b. Promethazine
c. Metoprolol d. Methacholine

315. Untrue about metabolism of a drug is

a. Active metabolites are formed
b. Inactive metabolites are formed
c. More fat soluble metabolites are formed
d. More water soluble metabolites are formed

316. All of the following are contraindicated in pregnancy except

a. Warfarin b. Corticosteroids
c. Lithium d. Ampicillin

317. Drug undergoing enterohepatic circulation is

a. Sulfonamide b. Penicillin
c. Erythromycin d. Streptomycin

318. Loading dose of a drug is given

a. When half-life of a drug is long
b. When serum concentration is to be achieved rapidly
c. When therapeutic index is low
d. When drug follows first order kinetics

319. Drug metabolism is increased by following except

a. Heavy smoking of cigarette
b. Low protein high carbohydrate diets
c. Severe malnutrition
d. Administration of allopurinol

320. Probenecid does not decrease the renal excretion of

a. Cephalothin b. Cephalexin
c. Cephaloridine d. Penicillin

321. Which of the following drugs cause IUGR

a. Methyldopa b. Hydraliazine
c. Propranolol d. Nifedipine

322. Therapeutic index of a drug

a. Denotes its utility in diseases
b. Denotes its margin of safety
c. Gives clue for its interaction vvith other drugs
d. Determines the potency of the drug

323. Which of the following avoids first bypass effect of drugs

a. Intrarterial injection
b. Intravenous injection
c. Rectal suppositories
d. Oral ingestion

324. Mitosis arrest in metapahase stage is seen with

a. Allopurinol b. Colchicine
c. Penicillamine d. Flucloxacillin

325. Which is not dose related

a. Hypoglycemia of tolbutamide
b. Drug fever of sulpha
c. Myocardial irritation of quinidine
d. Digitalis induced arrythmia

326. Which of the following drugs prevents enzyme induction?

a. Sulfonamide b. Phenobarbitone
c. Warfarin d. Actinomycin D

327. Prodrug is

a. Inactive drug which gets activated in body
b. Metabolic end product
c. Drug which competes with another for metabolism
d. Drug which increases efficiency of another drug

328. Drug with extensive first bypass effect is

a. Propranolol b. Digoxin
c. Quinidine d. Chlorpromazine

329. Zero order kinetics is seen in following except

a. Phenytoin b. Ethanol
c. Barbiturate d. Salicylates

330. Following drugs are contraindicated in lactation except

a. Lithium b. Ciprofloxacin
c. Spiramycin d. Diazepam

331. The receptor concept was first introduced by

a. J. N. Langley b. Simmonds
c. Paul Ehrlich d. Waksman

332. Therapeutically undesired but unavoidable pharmacodynamic effect of a drug in therapeutic doses is called

a. Idiosyncrasy b. Toxic effect
c. Side effect d. Intolerance

333. Drugs to be avoided in the first trimester of pregnancy

a. Insulin b. Phenytoin
c. Erythromycin d. Streptomycin

334. The following drugs are excreted in the bile except

a. Erythromycin b. Novabiocin
c. Chloramphenicol d. Rifampicin

335. True tolerance develops because of

a. Rapid excretion of the drug
b. Decrease in absorption
c. Binding with albumin
d. None of the above

336. Risperidone is a new

a. Analgesic
b. Antimigraine
c. Antiparkinsonian
d. Antipsychotic

337. The maximum effect of a drug is defined as

a. Therapeutic index b. Potency
c. Efficacy d. Adversity

338. If the drug has a short duration of action, the action can be prolonged by the following except

a. Interfering with renal excretion
b. Inhibiting drug metabolism
c. Frequent administration
d. Increasing dosage

339. Acidic drugs are rapidly absorbed from

a. Mouth b. Stomach
c. Intestine d. Rectum

340. Which drug has the maximum protein binding

a. Phenobarbitone b. Thiopentone
c. Sulphadiazine d. Sulphadimethoxine

341. Dose of a drug depends on

a. Rate of excretion b. Rate of absorption
c. Serum levels d. Half-life

342. A bactericidal drug would be preferred over a bacteriostatic drug in a patient with

a. Neutropenia b. Renal insufficiency
c. Cirrhosis d. Hemolytic anemia

343. The most important mechanism for the transfer of multiple antimicrobial resistance among gram negative enterobacteria is

a. Mutation b. Transformation
c. Conjugation d. Transduction

344. Drugs significantly affected by enzyme induction include the following except

a. Barbitone b. Chlorpromazine
c. Diphenyl hydantoin d. Warfarin

345. Drugs known to induce enzymes are the following except

a. Phenobarbitone b. Phenylbutazone
c. Phenytoin d. Pentamidine

346. Example of IgE mediated allergic drug reaction is:

a. Contact dermatitis
b. Anaphylaxis
c. Drug induced erythymaosis
d. Methyl DOPA induced haemolytic anaemia

347. The adrenaline in blood is metabolised by

a. Acetylcholine esterasse
b. COMT
c. Decarboxylase
d. Acetyl transferase

Answer Sheet

1. c	2. b	3. b	4. a	5. b	6. c	7. b	8. d	9. c	10. b
11. c	12. a	13. d	14. c	15. a	16. b	17. c	18. a	19. c	20. b
21. a	22. a	23. b	24. c	25. d	26. b	27. c	28. a	29. a	30. b
31. c	32. a	33. b	34. a	35. b	36. a	37. b	38. a	39. b	40. d
41. a	42. a	43. b	44. a	45. b	46. c	47. b	48. a	49. d	50. c
51. a	52. c	53. b	54. b	55. a	56. c	57. d	58. b	59. a	60. b
61. c	62. c	63. d	64. c	65. c	66. b	67. c	68. a	69. c	70. c
71. b	72. a	73. b	74. c	75. d	76. c	77. b	78. c	79. b	80. d
81. d	82. a	83. d	84. c	85. c	86. a	87. b	88. c	89. c	90. a
91. d	92. a	93. b	94. d	95. a	96. a	97. b	98. b	99. c	100. d
101. c	102. a	103. b	104. c	105. a	106. b	107. a	108. c	109. a	110. d
111. b	112. c	113. a	114. c	115. b	116. b	117. b	118. a	119. a	120. c
121. c	122. b	123. c	124. a	125. b	126. a	127. b	128. b	129. b	130. c
131. d	132. b	133. b	134. c	135. a	136. d	137. a	138. c	139. b	140. c
141. c	142. c	143. b	144. c	145. b	146. b	147. a	148. c	149. a	150. b
151. a	152. c	153. d	154. b	155. d	156. b	157. b	158. c	159. b	160. a
161. c	162. a	163. c	164. b	165. b	166. a	167. c	168. b	169. d	170. b
171. b	172. a	173. c	174. b	175. b	176. c	177. c	178. a	179. c	180. d
181. b	182. b	183. d	184. a	185. c	186. b	187. d	188. a	189. b	190. b
191. b	192. c	193. d	194. b	195. c	196. c	197. c	198. b	199. a	200. a
201. c	202. a	203. a	204. b	205. a	206. b	207. c	208. c	209. a	210. b
211. a	212. a	213. d	214. a	215. c	216. a	217. b	218. b	219. b	220. b
221. d	222. d	223. b	224. b	225. b	226. c	227. a	228. b	229. a	230. b
231. a	232. d	233. c	234. b	235. b	236. d	237. a	238. b	239. c	240. d
241. b	242. c	243. d	244. b	245. a	246. a	247. b	248. c	249. a	250. a
251. b	252. a	253. b	254. b	255. d	256. a	257. a	258. d	259. b	260. c
261. d	262. b	263. c	264. c	265. b	266. b	267. a	268. d	269. c	270. a
271. c	272. b	273. a	274. c	275. d	276. b	277. a	278. d	279. c	280. b
281. a	282. b	283. c	284. a	285. b	286. c	287. a	288. b	289. a	290. d
291. a	292. a	293. b	294. c	295. d	296. d	297. d	298. a	299. b	300. a
301. c	302. c	303. b	304. c	305. d	306. a	307. c	308. d	309. b	310. c
311. c	312. a	313. b	314. b	315. c	316. d	317. c	318. b	319. d	320. c

321. c	322. b	323. a	324. b	325. b	326. d	327. a	328. a	329. c	330. b
331. a	332. c	333. b	334. c	335. a	336. d	337. c	338. d	339. b	340. d
341. d	342. a	343. c	344. b	345. d	346. b	347. b			

Unit - 7

Veterinary Gynaecology and Obstetrics

Embryology of Reproductive System

Embryonic structure	Adult male	Adult female
Gonad	Testis, rete testis	Ovary, rete ovarii
Mesentery	Mesorchium	Mesovarium
Gubernaculum	Ligamentum testis	Round ligament of the uterus and the proper ligament of the ovary
Mesonephric tubules	Efferent ducts, Paradidymis, Vas deferens	Epoohoron, Paroophoron
Mesonephric duct (Wolffian duct)	Epididymis, Vas deferens, Seminal vesicle	Duct part of Epoophoron (Gartner's duct)
Paramesonephric duct (Mullerian duct)	Appendage of testis, Uterus masculinus	Oviducts, Uterus, Cervix, Vagina (Cranial portion)
Urogenital sinus	Prostalic, membranous and cavernous urethra; Bulbourethral glands (Cowper's glands); Prostate	Urethra, Vestibule, Vagina (Caudal part), Vestibular glands (Bartholin's glands), Paraurethral glands
Genital swelling	Scrotal pouch	Labia majora
Genital tubercle	Penis	Clitoris
Genital fold	Prepuce	Labia minora

Origin and Function of Neurohormones Regulating Reproduction

Hormones	Origin	Neural pathways	Principal functions
Prolactin releasing hormone (PRH) Prolactin inhibiting hormone (PIH)	Hypothalamus	Neurons containing dopamine in the arcuate nucleus	» Stimulates prolactin release » Inhibits PIH release
Gonadotropin releasing hormone (GnRH)	Arcuate nucleus, Ventromedial nucleus, Median eminence	Negative feedback from the gonads	» Helps in tonic release of FSH and LH
GnRH	Preoptic nuclei, Anterior hypothalamic area, Suprachiasmatic nucleus	Hypothalamic cells sensitive to estrogen, touch receptors in genitalia of reflex ovulating species	» Helps to stimulate the preovulatory surge of FSH and LH
Oxytocin (Hormone of rapid birth) (Hormone of love)	Paraventricular nuclei, Supraoptic nuclei	Tactile sensations from the mammary gland, uterus, and cervix	» Induces uterine contractions, milk letdown, and facilitates gamete transport
Melatonin (Hormone of darkness)	Pineal gland	Retina *via* retino hypothalamic fibres	» Inhibits gonadotropin functions in long day breeders, e.g., hamster » Stimulates the onset of the breeding season in shortday breeders, e.g., sheep

Reproductive hormones secreted from the Pituitary Glands

Name of the hormone	Structures and source	Principal functions
Luteinizing hormone (LH)	Glycoprotein, Gonadotropes in anterior lobe	Stimulates ovulation as well as luteinization of ovarian follicles. Testosterone secretion in male
Follicle stimulating hormone (FSH)	Glycoprotein, Gonadotropes in anterior lobe	Female: Stimulates follicular growth Male: Stimulates spermatogenesis process

Prolactin (PRL)	Protein, Mammotropes in anterior lobe	Promotes lactation and maternal behaviour
Oxytocin (OT)	Protein Stored in posterior lobe pituitary	Stimulates uterine contractions of pregnant animals Causes milk let-down

Hormones secreted from the different reproductive organs

Hormones	Structure and source	Functions
Estrogen (E) (Hormone of female reproduction)	C-18, Steroid, Secreted from theca interna of the ovarian follicle	It promotes sexual behaviour It stimulates development of secondary sexual characteristics, It had anabolic effects
Progesterone (P_4) (Hormone of pregnancy)	C-2l, steroid, Secreted by the corpus luteum (CL)	It acts synergistically with estrogen in promoting estrous behaviour It prepares reproductive tract for implantation
Testosterone (T_4) (Hormone of male reproduction)	C-19, steroid, Secreted from the Leydig cells of the testis	Develops and maintains accessory sex glands Stimulates secondary sexual characteristics, sexual behaviour and spermatogenesis; It had anabolic effects
Relaxin (RL)	Polypeptide hormone with α and β subunits, Secreted from corpus luteum and placenta	It favors the dilatation of cervix and contraction of the uterus
PGF2α (Hormone of luteolysis)	20-carbon unsaturated fatty acid, Secreted by almost all body tissues	It causes uterine contractions Helps in sperm trans port to the female reproductive tract It causes regression of the corpus luteum (luteolytic)
Activins	Protein, Found in rete testis fluid in male as well as follicular fluid in female	It stimulates FSH secretion

Inhibins	Protein, Found in granulosa cells in female and Sertoli cells in male	It had negative feedback on FSH
Follistatin	Protein, present in ovarian follicular fluid	Modulates the secretion of FSH

Placenta hormones

Hormones	Species	Structures and site	Source	Functions
» Human chorionic gonadotropin (hCG) (primates only)	Human, Monkey	» Glycoprotein, » Syncytiotrophoblastic cells	Urine, Blood	» Predominantly had LH like activity » It helps in maintaining the corpus luteum of pregnancy in primates
» Equine chorionic gonadotropin (PMSG/ eCG)	Horse	» Glycoprotein, » Endometrial cups of fetal origin	Blood	» Predominantly have FSH like activity, » Helps in formation of accessory corpora lutea in mare
» Estrogens (E)	Cattle, Sheep	» Steroid, » Fetoplacental unit	Blood	» Act on the uterus to increase both amplitude and frequency of contraction by potentiating the effects of oxytocin and $PGF_2\alpha$
» Progesterone (P_4)	Cattle , Sheep	» Steroid, » Fetoplacental unit	Blood	» Maintenance of pregnancy » Stimulates the endometrial gland secretions which are necessary for nourishment of the preimplanted blastocyst

» Relaxin (RL)	Bitch, Queen, Mare	» Polypeptide, » Structural similarity with insulin and Insulin like growth factors (IGF)		» Dilatation of cervix as well as vagina at the time of parturition
» Placental lactogen (PL)	Cattle, Sheep	» Protein, » Placental tissue	Blood	» Regulates transport of nutrients from dam to fetus however not fully elucidated
» Pregnancy specific protein-B	Cattle , Sheep	» Protein, » From conceptus	Blood	» It helps in Maternal Recognition of Pregnancy (MRP)

Estrous cycle, Estrus duration and ovulation in animals

Species	Estrous cycle length (days)	Estrus duration (hours)	Time of ovulation
Cow	17-24 days	18-24 hrs	10-12 hrs after end of estrus
Buffalo	17-24 days	12-30 hrs	15-18 hrs after end of estrus
Sheep	16-17 days	24-36; 32-40 hrs	30-36 hours from beginning of estrus
Goat	21 days	20-35 hrs	About last day of estrum
Sow	19-20 days	48-72 hrs	35 to 45 hrs from beginning of estrus
Mare	19-25 days	4-8 days	1 to 2 days before end of the estrus
Bitch	2 cycles per years	4-13 days (Av. 9 days)	1-2 days after the onset of true estrum

Site of ejaculation in different species of animals

Species	Site of ejaculation	Characteristics of Semen
Cattle, sheep	Vagina	Little accessory fluid, Semen with high sperm concentration
Monkey	Vagina	Incipient plug, Instant coagulation of ejaculate
Human, Rabbit	Vagina	Incipient plug, Slight coagulation of ejaculate

Horse	Uterus	Voluminous, Distention of cervix
Dog and Pig	Uterus	Voluminous, Retention of penis during copulation
Rodents	Uterus	Vaginal plug, Spasmodic contraction of vagina

Chemical components of semen in farm animals

Components	Bull	Ram	Boar	Stallion	Cock
Sperm ejaculate volume (ml)	5-8	0.8-1.2	150-200	60-100	0.2-0.5
Sperm concentration (million/ml)	800-2000	2000-3000	200-300	150-300	3000-7000
Sperm/ejaculate (billion)	5-15	1.6-3.6	30-60	5-15	0.06-3.5
Sperm motility (%)	40-75	60-80	50-80	40-75	60-80
Morphologically normal sperm (%)	65-95	80-95	70-90	60-90	85-90
Protein (g/100 ml)	6.8	5.0	3.7	1.0	1.8-2.8
pH	6.4-7.8	5.9-7.3	7.3-7.8	7.2-7.8	7.2-7.6
Fructose	460-600	250	9	2	4
Sorbitol	10-140	26-170	6-18	20-60	0-10
Citric acid	620-806	110-260	173	8-53	nil
Inositol	25-46	7-14	380-360	20-47	16-20
Glyceryl phosphoryl choline (GPC)	100-500	1100-2100	110-240	40-100	0-40
Ergothioneine	0	0	17	40-110	0-2
Sodium	225±13	178±11	587	257	352
Potassium	155±6	89±4	197	103	61
Calcium	40±2	6±2	6	26	10
Magnesium	8±0.3	6±0.8	5-14	9	14
Chloride	174±320	86	260-430	448	147

Species differences in testicular characters

Character	Bull	Stallion	Ram	Boar	Dog	Cat
Shape	Oval	Oval	Oval	Oval	Round to oval	Round to oval
Length (cm)	10-15	7.5-12.5	7.5-11.5	10-15	2-4	1.2-2
Diameter (cm)	5-8.5	4-7	3.8-6.8	5-9	1-2.5	0.7-1.5
Weight (gm)	200-500	200-300	200-400	600	7-15	0.7-1.5
Plane	Vertical	Horizontal	Vertical	Vertical	Oblique	Vertical

Duration of the spermatogenic cycle in different species

Species	Days
Boar and Buffalo	8.6 or 9
Ram	12.2 or 10
Horse	12
Bull	13.5 or 14

Nomenclatures used in semen biology

Basis	Characteristic	Nomenclature
Semen Volume	No volume	Aspermia
	Reduced volume	Hypospermia
	Increased volume	Hyperspermia
Sperm Concentration	Zero Concentration	Azoospermia
	Normal Concentration	Normozoospermia
	Reduced Concentration	Oligozoospermia
	Increased Concentration	Polyzoospermia
Sperm Motility	Decreased Motility	Asthenozoospermia
Sperm Viability	All dead sperms	Necrozoospermia
Abnormal sperm	High percentage of Abnormal sperm	Teratozoospermia

Approximate length of seminiferous tubule

Species	Length
Swine	6000 meters
Bull	5000 meters
Ram	4000 meters
Dog	150 meters
Cat	25 meters

Different types of fetal membrane and their functions

Membrane	Origin	Functions
Yolk sac	Early endodermal layer	Vestigial
Amnion	Cavitation from inner cell mass	Encloses fetus in a fluid filled cavity Act as a shock absorber It give protection to the fetus
Allantois	Diverticulum of hindgut	Blood vessels connect fetal with placental circulation It fuses with chorion to form the chorioallantoic placenta
Chorion	Trophoblastic capsule of Blastocyst	Encloses embryo and other fetal membranes Intimately connected with lining of uterus to form placenta
Umbilical cord	Amnion wraps about the yolk stalk	Encloses allantoic vessels and acts as the vascular link between mother and fetus

Classification of Chorioallantoic placentas in different animal species

Species	Chorionic villous pattern	Maternal-Fetal Barrier	Loss of Maternal Tissue at birth
Cow, Buffalo, Sheep, Goat	Cotyledonary	Synepitheliochorial	None (non-deciduate)
Mare	Diffuse and microtyledonary	Epitheliochorial	None (non-deciduate)
Pig	Diffuse	Epitheliochorial	None (non-deciduate)

Dog, Cat	Zonary	Endotheliochorial	Moderate (deciduate)
Human, Monkey	Discoid	Hemochorial	Extensive (deciduate)

Functions and origin of fetal fluids in farm animals

Fluid	Origin	Functions
Amniotic	Fetal urine Secretions from respiratory tract and buccal cavity Maternal circulation	It protects fetus from external shock. It prevents adhesion between fetal skin and amniotic membrane. It helps in assists in dilating cervix and lubricating birth passages during birth
Allantoic	Allantoic fetal urine Secretory activity of allantoic membrane	Allantochorion brings into close apposition with endometrium during initial attachment. Stores fetal excretory products not readily transferred back to the mother. It helps to maintain osmotic pressure of the fetal plasma.

Endocrinology of pregnancy in mare

Hormone	Source	Days of pregnancy
Progesterone	Ovary Corpus luteum (primary)	1-35
	Corpora lutea (secondary)	35-150
	Placenta	>150
Equine Chorionic Gonadotrophin (eCG)	Endometrial cups	36-140
Estrogen	Placenta	100-330

Stages of parturition (Labour) and related events

Stage of labor	Mechanical forces	Period	Related events
I. Dilation of Cervix	Regular uterine contractions	Beginning of uterine contractions until cervix is fully dilated and continuous with vagina	Restlessness, elevated pulse and respiratory rates Changes in fetal position and posture
II. Fetal Expulsion	Strong uterine and Abdominal contractions	From complete cervical dilation to end of delivery of fetus	Maternal recumbency and straining Rupture of allantochorion and escape of fluid from vulva Appearance of amnion (water bag) at vulva Rupture of amnion and delivery of fetus
III. Fetal Membrane Expulsion	Uterine contractions decrease in amplitude	Following delivery of fetus to expulsion of fetal membranes	Maternal straining ceases Loosening of chorionic villi from maternal crypts Inversion of chorioallantois Straining and expulsion of fetal membranes

Average duration of the three stage of labour in different animal species

Animal	I. Dilation of Cervix	II. Expulsion of Fetus	III. Expulsion of fetal membranes
Cow, buffalo	2-6 hrs	0.5 to 1.0 hrs	6-12 hrs
Mare	1-4 hrs	0.2-0.5 hrs	1 hrs
Camel	4-40 hrs	0.25 to 1 hrs	<1 hrs
Ewe	2-6 hrs	0.5-2.0 hrs	0.5-8 hrs
Sow	2-12 hrs	2.5-3.0 hrs	1-4 hrs
Bitch	2-12 hrs	3 to 6 hrs	Expuled along with fetus

Different fluorescent stains used in semen biology

Name of the test	Different fluorescent stains
Live and dead	Ethidium bromide (EB) Propidium Iodide (PI) Carboxy Fluorescein di Acetate (CFDA) SYBER-14 Hoechst 33258
Acrosome integrity	Arachis hypogaea (PNA) Pisum sativum agglutinin (PSA) Fluorescein Isothiocynate (FITC) Phyco erythryn (PE)
Mitochondrial Function	Rhodamine 123 JC- 1 Mitotrackers
Capacitation status	CTC assay Merocyanine 540 Filipin
Apoptotic changes	Annaxin V
Sperm DNA integrity	TUNEL assay COMET assay Acridine Orange (AOT)
Lipid Peroxidation	C11 BODIPY 581/591

Different Hormones and their half life

Name of the hormone	Half life
Progesterone	22 – 36 minutes
Oxytocin	30 second to 2 minutes
FSH	2.5 hrs to 3 hrs
LH	30 minutes
PGF_2 alpha	Seconds to minutes
GnRH	5 to 7 or 9 minutes
PMSG/eCG	7 days
hCG	24 to 36 hrs
LHRH	7 days

Testosterone	2 to 4 minutes (3 minutes)
Pregnancy associated glycoprotein (PAG)	7 days

Day of embryo collection

Animal	Days
Cattle	7th day
Buffalo	5th to 6th day
Sheep	4th day
Goat	3 to 5 day
Horse	7 to 8 day
Camel	7th day
Pig	4 to 6 day

Precursors of different hormones

Precursors	Enzymes involved	Hormones
Cholesterol	3β HSD	Pregnenolone
Pregnenolone	3β HSD	Progesterone
Testosterone	Aromatase	Estradiol
Progesterone	17α hydroxylase	Estradiol
Testosterone	5 α reductase	Dihydro testosterone (DHT)
$PGF_{2\alpha}$	9-Ketoreductase	PGE_2

Embryonic attachment to the uterus in different species

Name of the animals	Days
Cow	12
Ewe	15
Mare	35-40
Sow	18
Bitch and Queen	13-17

Time of maternal recognition of pregnancy in different species of the animals

Name of the animals	Days
Cow	16-17
Buffalo	15- 16 (one day earlier than cow)
Ewe	12-13
Doe	17
Mare	14-16
Sow	12
Camel	8
Bitch and Queen	Absent or not required

Initiation or formation of placenta in different animals

Name of the animals	Days
Cow	22
Mare	37
Ewe	15
Sow	13

Different stage of estrous cycle in different animals

Species	Proestrus	Estrus	Metestrus	Diestrus	Length
Cow	3 days	12-24 hrs	3-5 days	13 days	18-24 day (21 day)
Mare	3 days	4-7 days	3-5 days	6-10 days	19-23 day (21 day)
Sow	3 days	2-4 days	3-4 days	9-13 days	18-24 day (21 day)
Ewe	2 days	1-2 days	3-5 days	7-10 days	14-20 day (16.5)
Bitch	9 days	9 days	-	62-65 days	2 cycle per year

Different types of uterine infections

Uterine infection	Clinical Signs
Puerperal or acute metritis (also called as postpartum metritis, toxic puerperal metritis, septic metritis)	Abnormally enlarged uterus, fetid watery red-brown discharge, signs of systemic illness (decreased milk yield, dullness or other signs of toxemia) and fever (≥39,5°C), within 21 days after calving
Clinical metritis	Abnormally enlarged uterus, purulent uterine discharge detectable in the vagina within 21 days after calving, no signs of systemic illness
Clinical endometritis	Purulent (>50% pus) uterine discharge detectable in the vagina, more than 21 days after calving, or mucopurulent (50% pus - 50% mucus) uterine discharge detectable in the vagina after 26 days after calving no signs of systemic illness, no fever
Subclinical endometritis. (cytological endometritis)	No clinical signs of endometritis, no purulent or mucopurulent discharge. Diagnosis based on cytology: >18% of neutrophils in uterine cytology samples collected 21 -33 days after calving or >10% neutrophils at 34-47 days. This is also referred to as **'cytological endometritis**
Pyometra	Accumulation of pus in the uterus, enlarged uterus associated with presence of corpus luteum.

Methods of pregnancy diagnosis in cattle

S.No	Diagnostic methods	Day of Gestation
1	Early Conception Factor (ECF) or Early pregnancy factor(EPF)	48 to 72 hrs of fertilization
2	Real-time ultrasound (direct imaging)	13-21
3	Failure to return to oestrus & persistence of CL	21
4	Progesterone concentration in plasma or milk	21 to 24
5	Pregnancy associated glycoprotein (bPAG)	24
6	Palpation of the allantochorin (membrane slip)	33
7	Unilateral enlargement of horn, disparity in size, thinning of the uterine wall & fluid –filled fluctuation of enlarged horns	35
8	Palpation of the early foetus when amnion loses its turgidity	45-60
9	Palpation of placentomes	80

10	(Fremitus) Hypertrophy of the middle uterine artery	85
11	Oestrone sulphate in blood and milk	105
12	Palpation of foetus	120

Transport time of ova in the oviduct of farm and pet animals

Species	Time in oviduct (Hours)
Cattle	90
Sheep	72
Horse	98
Pig	50
Dog	168
Cat	148
Women	48-72

Estimates of the fertile life of spermatozoa and ova

Species	Fertile life of Spermatozoa (Hours)	Fertile life of Ova (Hours)
Cattle	30-48	20-24
Horse	72-120	6-8
Human	28-48	6-24
Rabbit	30-36	6-8
Sheep	30-38	16-24
Swine	34-72	8-10

Time of events in early embryonic development

Parameters	Cattle	Horse	Sheep	Swine
Gamete Longevity (hours)				
Spermatozoa	30-48	72-120	30-48	34-72
Ovum	20-24	6-8	16-24	8-10
Embryonic development (Days)				
2-cell	1	1	1	0.6-0.8
4-cell	1.5	1.5	1.3	1

8- cell	3	3	1.5	2.5
Blastocyst	7-8	6	6-7	5-6
Hatching	9-11	8	7-8	6
Blastocyst Transport to Uterus				
Hours	72-84	140-144	66-72	46-48
Cell stage	8-16	Blastocyst	8-16	4
Blastocyst elongation (days)	13-21	NE (no elongation)	11-16	11-15
Initial placentation (Days)	22	37	15	13
Birth (Days)	278-290	335-345	145-155	112-115

Gestation length of animals

Animals	Gestation length	Gestation length (days)
Cattle	9 months + 9 days	278
Buffalo	10 months + 10 days	310
Horse	11 months + 11 days	335
Camel	13 months + 13 days	405
Sheep	5 months + 5 days	148
Goat	5 months	150
Pig	3 months + 3 weeks + 3 days	114
Dog	2 months + 2 days	62
Elephant	20 months + 2 months	660

Age of Puberty

Species	Age at puberty
Bull	9 to 12 Months (range 6-18 months)
Stallion	18 Months (range 12 to 24 months)
Boar	5 to 7 Months (range 4 to 8 months)
Ram and Buck	7 to 8 Months (range 4 to 12 months)
Dog	7 to 10 months (range 5 to 12 months)
Cat	8 to 10 months (range 6 to 15 months)

Mating characteristics of different species

Species	Volume of ejaculate	Site of deposition	Duration of copulation
Bovine	3-5 ml	Anterior vagina, external os of the cervix	1-3 sec
Equine	75-120 ml	Cervix and uterus	20-60 sec
Caprine/Ovine	0.8-2 ml	Fornix vagina	1-2 sec
Swine	200-250 ml	Uterus	5-30 min
Dog	1-5 ml	Uterus	20-30 min

Time of testicular descent

Species	Time of testicular descent
Bull	3 ½ - 4 months of gestation
Stallion	9 -11 months of gestation
Buffalo	2-4 month after birth
Boar	3 months of gestation
Ram and Buck	2 ½-3 months of gestation
Dog	5 days after birth

Cattle Reproduction

- In cow, the length of estrous cycle **varies from 18 to 24 days (Average 21 days)**
- Cows are classified as : **non- seasonal polycyclic animal**
- Duration of estrus is **18-24 hrs**
- Ovulation is spontaneous in cattle
- Time of ovulation : **10 to 12 hrs after the end of estrus**
- optimal calving interval for both beef and **dairy cattle is 12 months**
- In cattle vaginal pH fluctuates throughout the estrus cycle but is lowest i.e. 7.38 on the day of estrus
- In Cow $PGF_2\alpha$ will not causes regression or prevent the formation of the **CL during its first 5 days of life**
- **MRP in cattle** occurs between **16-17 days** of pregnancy.
- Bovine conceptuses produces PGE_2 which may play a role in formation and maintenance of CL

- Protein B can be detected in the blood of **pregnant cow as soon as 22 days after conception**
- The period of corpus luteum activity is called the luteal phase; it lasts 16 to 17 days in cows
- Post-partum uterine involution in cow takes **up to 45 days postpartum**
- In Cows silent ovulation can **occurs 2 to 3 weeks following parturition**
- Maximal fertility in the cow occurs **60 to 90 days after calving**
- In cattle **cervical crypts** act as a sperm reservoirs
- Transport time of ova in the oviduct is **90 hrs**
- **Hyaluronidase,** present in the **bull acrosome** helps in penetration of cumulus oophorus
- On day 13 in the cow the blastocyst undergoes a logarithmic elongation phase
- Cattle is a **CL dependent** animal
- **Caruncles are convex** in cow; **fetal cotyledons are concave** in shape
- Number of placentomes are : **70-120**
- **Period of embryo:** 15 to 45 days of gestation and **Period of fetus:** 45 days to until birth
- Cystic ovarian disease is **common in dairy cattle** than buffaloes
- Period of maximal embryonic mortality in cow is **8 to 16 days of gestation**
- Stages of parturition: **Dilatation of cervix: 2-6 hrs, Expulsion of fetus: 0.5-1.0 hrs, Expulsion of placenta: 6-12 hrs**
- The duration of one cycle of the seminiferous epithelium is 13.5 days for bulls.
- Approximately 61 days (4.5 cycles of seminiferous epithelium) are required for completion of spermatogenesis
- In bull just before mount accessory fluid dribbles from the penis which was secreted form **bulbourethral glands.**
- The ejaculatory thrust of bull deposits the semen in the **anterior vagina near the external os of the cervix.**
- Commonly used model for semen collection: **Danish model**
- Spermatozoa are transported through the epididymis in Bull about : 7days

Buffalo Reproduction

» Buffalo is a shy breeder, sluggish breeder and seasonal breeder (**Short day breeder**).

» Water buffalo attains puberty at a later age than that of cattle.

» Vulvar labia is less tightly apposed and clitoris are well developed than that of cattle

» Cervix is less conspicuous and comprises of 3 to 4 annular rings

» Uterine horns are smaller and more coiled

» In buffalo the **corpus luteum is embedded** in the ovary

» Number of placentomes: **60 to 90 (can varies from 70 to 200)**

» Buffalo ovaries are **somewhat elongated** and considerably **smaller** than that of cow

» The number of primordial follicles in the buffalo heifer ovaries are much lower than cow heifer

» The number of graafian follicles more than 1mm in diameter is much less and follicular atresia is greater in buffaloes

» Age at puberty in water buffalo: **24-36 months** (River buffalo: 15-18 months and Swamp buffalo: 21-24 months)

» Most of pregnancy occurs when the buffalo heifer attains the body weight of around 250-270 kg.

» In buffaloes: Ovulation occurs 15-18 hrs after the end of estrus or about 18-45 hrs after the onset of estrus or 18-40 hrs after the LH surge.

» In buffaloes the duration of LH surge average is about 9 hrs.

» Chromosome number of **swamp buffalo is 48** where as **River buffalo it is 50**

» The river type buffalo exhibits estrus earlier (15-18 months) than the swamp type (21-24 months).

» Buffalo heifers had **inherently delayed puberty** and **higher in age at first calving**

» Buffaloes reared at tropical and subtropical countries shows seasonality and are **short day breeder**

» Buffaloes reared at equatorial zone : show estrous cycle throughout the year and are seasonally polyestrous

» For buffalo decreasing day length and cooler ambient temperature favors the normal ovarian cyclicity whereas, long day length and higher summer temperature depress the ovarian cyclicity

» **Doka** is a physiological phenomenon used for detection of estrus in **Buffaloes**

- Overt signs of estrus in buffaloes are not pronounced as its in cow
- **Frequent urination (Frequent micturition)** has been reported to be a most reliable indication of buffaloes in estrus
- Buffaloes exhibit heterosexual behaviour (Standing to be mounted over by the bull) and homosexual behaviour is generally absent as it is present in cow (Standing to be mounted over by other females) and occasionally observed in buffaloes.
- Acceptance of male is the most reliable sign of estrus in the buffaloes
- Signs of estrus are less intense in buffalo than cattle
- Majority of the buffaloes exhibit estrus either in night or early morning hours
- In buffalo first conception occurs at an average body weight of 250 to 275 kg, which is usually attained at 24 to 36 months of age.
- The length of the estrus cycle is **about 18-24 days**
- Duration of estrus lasts about **12 to 30 hrs**
- **MRP in Buffaloes** occurs between 14-15 **days (One day earlier than cattle)** of pregnancy
- **Two wave follicles** are more commonly reported in buffaloes
- In buffaloes, number of **primordial follicles are very low (12,000-19,000)** as compared to cattle
- In buffaloes, the rate of follicles atresia also very high at around **66.7%** than that of cattle
- In buffaloes the progesterone concentration is significantly higher during summer as compared to winter; this is because of heat stress induced raise in progesterone from adrenal cortex.
- Lower peak values of estradiol around estrus coupled with low progesterone concentration was attributed to be the major factor responsible for a higher incidence of silent estrus during summer.
- Lower basal level of LH and lack of pre-ovulatory surge have been reported to be associated with ovarian inactivity and anestrus condition during summer in buffaloes.
- During summer, the buffaloes had higher prolactin (PRL) concentrations causes suppression of progesterone concentration that resulted in early embryonic mortality at around 50%.
- The testes of the buffalo descend into the scrotum at **2 to 4 months after birth**
- Spermatogenesis commences at 12 to 15 months, but the ejaculate contains viable spermatozoa only when animals are about 24 months old.

- Length of seminiferous tubules in buffalo bull is : **3000 meters**
- Generally buffaloes has long calving interval than that of cattle i.e. one month longer gestation period, delayed resumption of postpartum estrus and delay in conception due to repeat breeding
- Post-partum uterine involution in cow takes **up to 35 days postpartum**
- Gestation length in buffalo is **10 months + 10 days (335 days)**
- River buffalo × Swamp buffalo hybrids have intermediate gestation length of **315 days.**
- The incidence of **right uterine horn pregnancy is higher** than left horn **(67% right vs 33% left)**
- The testes, accessory sex glands and the penis of the water buffalo are smaller than those of cattle
- The water buffalo, among farm animals except the boar, has one of the **shortest spermatogenic cycle**
- The normal ejaculate is **grayish to milky white**, rarely exceeds 5 ml with a sperm **concentration between 300-1500 million cells per ml**
- Osmotic pressure of buffalo semen is **256 milliosmole**
- Method of insemination: Recto-vaginal
- In buffalo sperm motility is lower than that of cattle
- Shape of buffalo head spermatozoa is: **Rectangular**
- pH of buffalo semen is **6.8**
- Level of ascorbic acid in buffalo semen is **4mg/100 ml**
- The motility of buffalo spermatozoa is lower than cattle
- Post-thaw progressive motility of buffalo semen is varies from 35 to 50%
- Buffalo sperm **Head length - 8.3 µm**; Mid piece length is - **12.2 µm**; Tail length is - **54.8 µm**
- Overall the length of buffalo spermatozoa is greater than cattle spermatozoa (75.4 µm vs 69.3 µm)
- In buffalo bull approximately **38 days** require to complete the spermatogenesis process
- In buffalo duration of one cycle of the seminiferous epithelium is about **8.6 days**
- Length of buffalo bull AV is **25-30 cm**
- Testicular surface area of buffalo is lesser than cattle
- Buffalo spermatozoa is more susceptible to lipid peroxidation during cryopreservation

process because of presence of **High concentration of PUFA**

- The optimum timing of AI is at the end of standing estrus somewhat later than cattle
- The gestation length ranges from **305 to 320 days in water buffaloes** and from **320 to 340 days for the swamp buffalo.**
- Buffalo **blastocysts are slightly darker** than cattle blastocysts
- Day of embryo collection in buffalo for EET: **5 to 6 day**
- The postpartum interval to first ovulation is longer in buffalo than in cattle.
- First post partum ovulation occurs on day 60 in river buffalo and day 96 in swamp buffalo
- In buffalo first estrus is observed **at 2 to 3 months** after parturition.
- In dairy buffalo herds using AI or hand mating conception rates are 50-60% with chilled semen; 25-45% with frozen semen and over 60% with natural service.
- **Double slipping of allantochorion** can be palpable **on day between 42-56 of pregnancy**
- **Placentomes** can be palpable **beyond 70 days of pregnancy onwards**
- **Milk progesterone assay** can be performed between **day 22-24 days after breeding**
- **Fetal heart rate** can be detectable **on day between 30-35 days** with the help of ultrasonography
- Silent estrus and summer anestrus are more common in buffalo
- Buffaloes are more prone for uterine torsion due to presence of **long mesometrial attachment or long broad ligament**
- Incidence of **dystocia due to uterine torsion is more common** as compared to cow
- The direction of uterine torsion in buffalo is of **> 90% in right side (Clockwise)**
- Uterine involution: 30 days in the suckled swamp buffaloes and 45 days in milked river buffaloes
- **Buffalo have lower reproductive efficiency:** Delayed age of maturity, Longer calving interval, delay in resumption of postpartum estrus, delay in conception rate, weak/silent estrus, seasonality of breeding, poor libido and poor semen quality.
- Incidence of reproductive disorders are higher in river buffaloes than in the swamp buffaloes
- In India and Pakistan buffaloes have optimum fertility during cooler months of the year
- In buffaloes had higher calving frequencies during rainy and winter seasons reflect maximum fertility of buffaloes during the months of **September to December** in India.
- A **higher level of circulating prolactin is** considered to mediate the effects of hot summer by suppressing LH and progesterone secretion.

- The ratio of FSH and LH is lower in hot summer months compared to peak breeding season.
- Significantly higher incidence of repeat breeding is observed in buffaloes during **autumn season**
- Maximum number of buffaloes come to estrus during winter than summer season
- Period between **October to February**, characterized by shorter day length and lower ambient temperature appears to be more favorable for the breeding of buffaloes in northern part of the country.
- The ambient temperature of 25-32°C and relative humidity (RH) around 85-90% are most suitable for buffalo breeding.
- In buffaloes: number of service per conception was higher in summer calvers than those calving in other season.
- **Silent** and **short period** of estrus are the common aberrations of estrus during summer in buffaloes
- The intensity of estrus is decreased due to high environmental temperature that makes more difficulty in detection of estrus during summer in buffaloes
- History
- First buffalo calf was born through AI in the year 1943 at Allahabad Agricultural Institute in India
- First buffalo calf was born through ovum pickup (OPU) in the year 2008. At G.B. Pant University of agriculture and technology (Name of the calf is Saubhagya), Pantnagar, India
- First buffalo calf was born through embryo transfer technology (ETT) in the year 1988 at Sabarmati Ashram Gaushala, Gujarat, India.
- First Asian Buffalo calf born through embryo transfer technology in the year 1983
- First successful freezing of buffalo semen was reported by Roy *et al.*, in the year 1956
- First report of pregnancy with frozen-thawed buffalo semen was reported by Basirov in 1964.

Sheep and Goat Reproduction

- Domestic sheep: Ovis aries; Domestic goat: Capra hircus
- Both sheep and goats are **seasonally polyestrous**
- This seasonality is governed by photoperiodicity with estrus activity commencing during a period of **decreasing day length.**

- **Melatonin levels are high during dark periods** and low during light periods.
- **Decreasing (or short) day lengths** stimulate the secretion of LH, FSH and Testosterone in ram
- **Age at first ovulation,** occurs at 5-7 months in doe and 6-9 months in ewes
- Wool breeds have longer estrous periods than meat breeds.
- **Angora goats** have a shorter duration of estrous (22 hrs) than the dairy goat breeds.
- Signs of estrus are more conspicuous in does than ewes.
- **Ram effect** stimulates ewes to ovulate is not known, but ovulation is preceded by LH peaks that occurs within 48 hrs after ram introduction.
- The ewe normally ovulates near the end of estrus, about 24 to 27 hrs after the onset of estrus.
- **Flushing** or increasing the level of nutrition before mating is commonly practiced in sheep in order to increase ovulation rate.
- The penis of sheep and goat is **fibroelastic** and does not enlarge during erection.
- The CL of pregnancy persists throughout gestation, but the two species differ in the source of progesterone for pregnancy maintenance.
- The sheep is a placenta-dependent species; whereas the goat is a CL dependent species.
- During the first trimester, both species depend upon the CL. The placenta becomes the primary source of progesterone in the sheep, whereas the CL continues as the major source in the goat.
- Ovariectomy in the **goat** at any stage of pregnancy causes **abortion**

Canine Reproduction

- Reproductive tract is almost **V shaped** in bitches
- An Italian physiologist, **Lazzaro Spallanzani** reported first successful use of AI in bitch (1780)
- First successful AI was done in bitch by using **chilled semen** by Harrop in **1954.**
- First record of successful **Embryo Transfer** in bitches: Kinney *et al.* in 1979
- **Type of placenta**: Endotheliochorial, Zonary placenta
- Bitch don't have intercornual ligament
- Marginal haematoma: **Green border in bitch (due to uteroverdin)**
- Prolactin provide luteotrophic support during **second half of gestation**

» Bitch has **prolong luteal phase (65-75 days)**

» **Progesterone level** in both pregnant as well as non-pregnant bitch are same

» Peripheral plasma **estrogen levels** are slightly higher in pregnant bitches compare to non-pregnant bitches

» **Relaxin** secreted from placenta has been detected in the pregnant bitches at **20-30 days of gestation**

» The minimum concentration of progesterone required to support the pregnancy is only **2ng/ml**

» **Preovulatory increase of plasma progesterone** was used as guide for optimum time of mating

» In bitch ovulation is spontaneous and normally occurs: **1-2 days after the onset of the acceptance period**

» One of the problem during pregnancy diagnosis in bitches is **overt pseudo pregnancy**

» Optimum period for pregnancy diagnosis by abdominal palpation in bitch is **24-30 days**

» Prenatal development in the dog is divided into three periods

» Period of the ovum (Days 2-17); 2. Period of embryo (Days 19-35); 3. Period of fetus (Days 35 to birth)

» Testicular differentiation in the dog has been observed **at 36 day of gestation.**

» **Pregnancy diagnosis by Radiography:** Fetal sac at 23-25 day of gestation; Fetal skeleton at end of 6th weeks of gestation; Fetal skull at 45 day of gestation

» By **Ultrasonography** Fetal heart sound at 29 days of gestation (24 to 29 days) can be detected

» By Ultrasonography ovulation was difficult to detect since follicle did not collapse and corpora lutea had central fluid filled cavities unoccupied by luteal tissue

» Canine placenta does not secrete any gonadotrophic hormones but it secrete **Relaxin**

» Progesterone level start to decline gradually from **about 30th day of gestation**

» Prolactin level increases as progesterone level decreases 1-2 days before whelping

» The average inter-oestrus interval in bitches is 7 month. However Collie breed is having 37 wks and German shepherd breed is having 26 weeks.

» A decline in rectal temperature precedes parturition by approximately **12-36 hrs** in bitch

» Duration of first stage of labor in bitch: **2-12 hrs**

» Duration of second stage of labor in bitch: **3-6 hrs**

» Pheromone of male dog: **Methyl-para-hydroxybenzoate**

- Ideal interval between semen collections are: **2 to 5 days**
- The most common method of semen collection: **Digital manipulation**
- The second fraction of semen is **sperm rich fraction**
- The normal semen color of whole ejaculate is: **Grayish white**
- Normal semen contain at least: **70% of progressive motile spermatozoa**
- Normal sperm concentration per ml - **80×10^6**
- The normal spermatozoa necessary for AI - **150×10^6**
- Usually 60- 80% conception rates are realized by AI with fertile dog semen
- The normal dog semen consist of maximal **30% of dead spermatozoa**
- Normal bacterial count in the dog semen culture - **less than 10 CFU/ ml**
- Decreased seminal plasma ALP concentration indicate - **Incomplete ejaculation, bilateral epididymal obstruction**
- The normal seminal plasma ALP concentration in dog: **Typically very high (5,000-40,000 IU/L)**
- Relaxin hormone is responsible for **fetal viability** in case of Bitch
- Ovulation time in bitch: 1 to 2 days after the onset of true estrus
- Ovulated ova under goes maturation at **1 to 2 days before fertilization**
- Transport time of the ova in the oviduct: **168 hrs**
- Cervix is poorly defined in bitch
- Pseudocervix is present in bitch
- **Primary uterine inertia** is a most common cause of dystocia in bitches
- Indicator hormone of pregnancy in bitches: **Relaxin**
- Indicator hormone for identification of breeding time: **Progesterone**
- **Proligestone** is a drug of choice for suppression of estrus
- **Progesterone** concentration will not change during normal pregnancy, non-pregnancy, pyometra and hysterectomized bitch.
- Female bitch pseudohermaphrodites generally occurs due to the administration of **androgen** during pregnancy
- **Frolich's syndrome:** Acquired atrophy of genitalia which is seen with neoplasia of the hypothalamus or pituitary
- Other acquired abnormalities of the reproductive tract include:1. Endometrial hyperplasia 2. Pyometra, 3. Vaginal hyperplasia

» Vaginal prolapse occurs in bitch during: **pro-estrus and estrus**

» The most common ovarian tumors in bitches: **Granulosa cell tumors**

» Most bitches ovulate by day 10 to 14 after the onset of **pro-oestrus**

» **Cystic follicle** and **corpora lutea** are very rare in the bitch

» **Metrorrhagia:** It is a condition in which the ovary of aged bitch having a mucohaemorrhagic vulvar discharge (Follicular and Luteal cyst)

» Brucella canis causes abortion in between **45 and 55 days of pregnancy.**

» In many cases cystic endometrial hyperplasia ultimately leads to: **pyometra**

» Pyometra is a **disease of luteal phase,** with most of the bitches showing clinical signs between 5 and 80 days after the end of estrus

» Progesterone was the main hormone concerned with inducing **uterine glandular hyperplasia** which **preceded pyometra**

» In case of pyometra the most common organism isolated from the uterus is: **E-coli (65-70%)**

» **Progesterone** sensitized endometrium and myometrium had an affinity for **E-coli**

» **Long luteal phase** is one of the most contributing factor for pyometra

» **Progesterone** increases the susceptibility of the genital tract to infection

» **Estrogen enhance** the stimulatory effect of progesterone on the uterus

» **Prostate** is the only accessory sex gland in male dogs

» **Parasympathetic** stimulation causes **erection of penis**

» **Sympathetic** stimulation causes **ejaculation**

» Prostatic fluid contribute **97%** of the seminal volume

» Prostatic fluid represent major source of **first and third fraction** of the ejaculation

» Prostatic fluid lack: **simple sugar**

» Larger breeds of dogs such as **German shepherd and Dobermans** seem to have an increased prevalence of prostatic affection.

» The most common bacteria causing acute bacterial prostatic infection is: **E-coli (70%)**

» The specific antibiotic therapy for prostatic disease: Erythromycin, Trimethoprim, Fluroquinolones, Chloromphenical and Trimethoprim-sulfa are able to cross the prostatic acini

» **Adenocarcinoma and Transitional cell carcinoma** is the two most common neoplasm affecting canine prostate

» Prostaglandins are used successfully in the case of: **open cervix pyometra**

» A **surge in plasma LH** concentration triggers ovulation

» In bitch ovulation is spontaneous and eggs are ovulated as: **Primary oocytes**

» The Oocytes are immature at ovulation and must reach the metaphase of the second meiotic division after extrusion of the first polar body

» The ovulated oocyte undergo maturation for about 48-60 hours, Oocyte remain fertilizable for 2-3 days.

» If the cornified cells are **around 80% during estrus period** then allow for breeding

» During estrus period vaginal endoscopy findings are

» Mucosal shrinkage, 2. Wrinkling of the mucosal folds becomes distinctly angulated and dense, 3. Creamy to white in color discharge

» Breeding is best planned **approximately 4 days after the first detected mucosal shrinkage** or at the onset of the period of obvious angulation of the mucosal folds

» Highly effective and safest progesterone for contraception in bitch is **proligestone** @ 10mg/kg I/M or S/C every 3 months.

» Androgen (**mibolerone**) is most commonly used in **non-breeding bitches** for contraception process.

» Cytological changes through the canine estrus cycle reflect changes in blood concentration of **estrogen**

» Canine ovulation occurs 2 days after the LH surge

» Raising levels of estrogen induce the **cornification of vaginal epithelium** that is characteristic of smears examined during estrus.

» During estrus **100% cornified cells** present

» RBCs present during pro-estrus whereas WBCs present during diestrus phase

» Canine pyometra is a common reproductive disorder of intact, diestrus bitch which affects nearly one fourth of all female dogs before they reach 10 years of age

» Pyometra typically occurring during or immediately following a period of progesterone dominance

» The open cervix pyometra bitches are less systemically ill than closed cervix pyometra

» Vaginal cytology examination is an initial tool in diagnosis of canine pyometra (Intra cellular and extracellular bacteria may present in the smear)

» USG findings in pyometra:

» Uterus filled with anechoic to hyper-echoic fluid

- Uterine wall is thick and hypo-echoic
- In case of pyometra OH operation is the choice of treatment for **older and unbreedable bitches**
- $PGF_2\alpha$ treatment is a practical treatment for pyometra when reproduction is desired
- Bitch **has no acute luteolytic** mechanism in the absence of pregnancy
- **Rapid progesterone withdrawal** is the stimulus for elevation of prolactin
- Normal luteal function in bitches requires both **LH and prolactin** as luteotrophic hormones
- Leukocytosis during canine pyometra is common finding (**TLC 15,000-60,000/mm^3**)
- USG is a method of choice for assessment of **fetal viability**
- Significantly lower plasma relaxin level has been found in pregnant bitches with a high incidence of embryonic/fetal death
- **TVT (Transmissible Venereal Tumor):** Diameter of TVT cell: 14-30μ; Chromosome number: **59 (57 to 64)**; drug of choice: vincristine @ 0.025 mg/kg body weight
- Ampullae is absent in male dog
- Seminal vesicles and bulbourethral glands are absent in male dog
- The dog's penis have a bulbus glandis muscle which is responsible for prolonged retention of the penis during coitus
- **Copulatory tie:** the contraction of muscles in the vestibule of the female bitch's vagina caudal to the bulbus glandis assists the retention of penis in the female reproductive tract called copulatory tie.
- In dog final distention of the penis does not occur until after intromission.
- Estrus female bitch release the **methyl-para-hydroxyl benzoate**
- During pro-estrum: bitch will not accept the male for mounting
- During estrus period bitches accept male for mating
- A blood level of progesterone **higher than 5.0 ng/ml** is considered as a good indication that the bitch has ovulated.
- During natural mating semen is **deposited in the bitch's uterus**
- In the dog and cat **corona cells may persist for several days**
- In bitch **ova remain fertile** in the oviduct **for 4 to 8 days**
- In bitch fertilized egg require pass through the oviduct in to the uterus takes around **5-8 days (at 16-32 cells stage morula)**

- In dog the spermatozoa may survive and remain **fertile for 5 to 6 days**
- Embryonic attachment to the uterus at **13-17 days of gestation**
- No requirement of MRP in canine
- In bitch **zonary type of placenta which completely encircles** the embryo is present but in cat it is incomplete
- The placenta of dog and cat is **partially hemochorial**
- In bitch cervico-vaginal prolapse most commonly occurs at the time of **pro-estrus** and **estrus**
- **Super fecundation**: When mating to two dogs of different breeds is known to have occurred in the one estrus cycle. This is because of the number of ova shed and their longevity, length of estrus and the promiscuous mating behavior of the species. It is more common in bitch
- Testicular descent in dog: about **5 days after birth**
- **Whipple's operation:** for the treatment of prolapsed vagina in the bitch
- In dog the presence of a dark **green vulvar discharge more** than 12 hours after parturition is a symptom of retention of fetal membranes (RFM).
- In Bitch: **Poll presentation** and **lateral deviation** of the head and neck are frequent causes of dystocia
- In the dog the pseudo-pregnancy period last for 50 to 60 days
- Duration of coitus in a male dog: 15 to 30 minutes.
- **Ovulation:** 1-2 days after the onset of true estrum
- Shape of ovary in bitch: **Oval**
- In dog the **ovarian bursa usually contain fat** but absent in cat
- Location of uterus: in dog uterus lies entirely within the abdominal cavity
- **Vestibular glands** are absent in bitch
- **True hymen** is lacking in bitch and cat
- In dog and cat the fetus utilizes **glucose** for energy
- Green colored lochia is associated with green pigment called **uteroverdin** it is a breakdown product of hemoglobin
- **After 48 hrs** of labor no living canine fetuses are ever found
- Site for epidural anesthesia of bitch is: **Lumbosacral** space
- In bitch's blastocyst remains **spherical** in shape (elongation of blastocyst is absent)

» Puberty is normally reached at an age of **7- 12 months (range 6-8 months)**

» The LH peak occurs **24 to 48 hours prior to ovulation**

» Behavioral estrus in the bitch is potentiated by exposure to **elevated levels of estrogen**

» **Feral and Basenji** breed of bitches come to estrus only once in a year

» PH of dog semen is **6.7**

» Dog semen **lack fructose**

» Dog semen has 7 times more level of **copper** and 20 times more level of **zinc** compare to blood

» In bitch when fetal membranes are expelled in **about 10 minutes after** the birth of the pups they are eaten by the bitch.

» Implantation occurs **18th day** after fertilization

» In dog **large quantity of chloride ions** present in the prostatic gland secretion

» In dog during copulation, the penis of the dog is gripped by the levator vestibule of the vagina of bitch, whereupon engorgement of the Bulbus glandis takes place

» Average reproductive life for bitch is 8-12 years

» After whelping the uterine horns are back to nearly normal size in **4 to 5 weeks**

» Only in the bitch **vaginal process** remains visible in the adult animal

» Weight of testicle: **7-15 grams**; Shape of testicle: **Round to oval**; Plane of testicle: **Oblique**

» Ampullae are very small or absent in male dog; Male dog having: **Os-penis**

» In male dog glans penis consists of two parts

» 1. Pars longa glandis 2. Bulbus glandis

» Sigmoid flexure is absent; prostate gland is **relatively large**

» Sertoli cell tumors (Feminizing tumors) of the canine testis are not uncommon and produce high estrogen levels with signs of feminization and testicular atrophy

» During semen collection by AV method **pressure is most important** than temperature

» **Harrops model of AV** used for semen collection in male dog

» The most satisfactory method of treatment for prostatic hyperplasia in dog is: **Castration**

» TVT is the most commonly seen on the penis and prepuce of a male dog

» **Dormitory effect:** Normal bitch will begin cyclical if they are housed with other cyclical bitches

» Sperm reservoir for bitch is: **Endometrial glands**

- **Dystrophia adiposo genitalis syndrome in dog:** Testicular degeneration and atrophy of the testis occurs in the dog due to tumors of the anterior pituitary gland or hypothalamus interfering with the production of gonadotropic hormones. Besides this testicular atrophy, obesity and other signs commonly develop.
- Incidence of cryptorchidism in dogs ranges from: **1-7%**
- **Paraphimosis** is relatively **common in the dog** following copulation or spontaneous erection
- **Phallopexy** has been successfully employed as a means of managing recurrent paraphimosis in the dog.
- **Priapism**: Persistent erection of penis in the absence of sexual stimulation occurs most often in the dog. Penile amputation is often the only feasible treatment
- In male dogs mycoplasma canis and canine distemper virus are significant infectious causes of orchitis
- The common testicular tumors of dog are: **Leydig cell tumor, Seminoma** and **Sertoli cell tumor**
- Overall, testicular tumors account for over 10% of tumors in male dog, with a considerably increased incidence in animal with cryptorchid testis
- **Sertoli cell tumors** are usually characterized by feminization in response to the tumour's estrogen-secreting properties. Feminization is characterized by **gynaecomastia, symmentrical alopecia, penile atrophy**, a pendulous prepuce and attraction of male dogs.
- The oestrogenic secretion of the sertoli cell tumor causes squamous metaplasia of the prostate gland
- Prostatic disease is common in the dog
- **Prostatitis** is probably the most significant disorders of the canine prostate that interfere with fertility
- Prostatitis and prostatic hyperplasia often occur together
- **Dachshund** and **Scottish terrier** are particularly prone to primary uterine inertia
- In bitch irregularities of head posture are common and **vertex (butt) presentation and lateral deviation of the** head are frequently encountered.

Embryo Transfer Technology

» The first calf through embryo transfer in buffalo in the world was **produced in 1983** by **Drost *et al.*,** (1984) at the University of Florida, USA.

» **Synchronization of estrous cycle** is the first step in Embryo transfer.

» Vitrification is a one of the simplest method of embryo cryopreservation.

» The zona pellucid has the ability to prevent the entry of virus into the embryo.

» **Ultrasonography guided** technique is a non-invasive technique for oocyte aspiration

» There are two basic methods of Synchronization of estrous cycles in farm species

» Inhibiting LH secretion and Shortening the life span of the CL

» Generally, for Synchronization of estrous: long-term progesterone treatment for 14 to 21 days depending on the species is given.

» On progesterone withdrawal, follicular growth, estrus and ovulation occur within 2 to 8 days.

» The two primary luteolytic agents are **estrogen and $PGF_2\alpha$** or its analogue (Cloprostenol).

» Estrogen is luteolytic in ruminants but not in horse and pig. Whereas $PGF_2\alpha$ is luteolytic in all species.

» A single injection of **$PGF_2\alpha$** will regress the CL usually **within 24 to 72 hrs** resulting **into** estrus and ovulation within 2 to 3 days.

» **$PGF_2\alpha$** and its analogs are the most effective method for estrous cycle control in dairy cattle.

» Norgestomate contains progesterone.

» Progesterone (Altrenogest) fed for 14 to 18 days is effective in synchronizing estrus in cyclic gilts and sow

» **$PGF_2\alpha$** is not useful for synchronizing estrus in swine because the CL do not respond to $PGF_2\alpha$ during the first 12 or 13 days of the estrus cycle.

» Estrogen or hCG on day 12 of an estrous cycle prolong the life span of CL in pigs.

» One potential way of synchronizing estrus in swine is to inject 500 to 1000 IU of hCG to each female on day 12 of an estrous cycle, then inject $PGF_2\alpha$ about 3weeks later.

» Diestrous mares will respond to a single injection of prostaglandin by exhibiting estrus within 3 to 5 days.

» The superovulatory treatment can be initiated anytime between day 6 of the estrous cycle and natural CL regression.

» In cattle the optimum time for superovulatory treatment done in **between 8** and **12 days of estrus cycle.**

» Most donors are in estrus 2 to 3 days (48 to 72 hrs) after prostaglandin injection.

- Generally donors respond 1st, 2nd and 3rd superovulatory treatment. Continuously superovulation process cannot be done because of antibodies against that hormone.
- In cattle, buffalo and mare the embryos are collected by non-surgical method (transcervical recovery).
- In sheep, goat and swine the embryos are collected by surgical method (Laparotomy).
- Under most conditions, embryos between the **8th cell (4-cell stage in pigs) and blastocyst stage** result in the higher pregnancy.
- Most bovine embryos are collected from the uterus from **the morula to the expanded blastocyst stage.**
- In general, **only excellent and good quality embryos** are considered as transferable embryos in cattle.
- Spermatozoa do not attain their ful capacity for fertilization until they are transported in the female reproductive tract.
- **Capacitation** allows sperm to undergo a normal acrosome reaction before fertilization.
- Artificial capacitation is induced by **Heparin.**
- Unlike sperm, the oocyte requires no exposure to the reproductive tract following release from the gonad to be fertile.
- Oocytes are collected by **slicing of ovarian tissues** gives the **highest number of oocytes.**
- Aspiration is the most efficient technique in terms of the time to obtain oocytes.
- In most laboratories, bovine oocytes are matured in TCM199 medium with 10% fetal calf serum and gonadotropins (FSH, LH).
- In *in-vitro* culture media used for embryos the **optimum pH** is **7.2 - 7.6** and osmolalities between **270 - 300 mOsm/kg** is required
- **Sheep embryos** are successfully frozen with ethylene glycol (1,5M) or DMSO (1.5M) rather than with glycerol.
- **Swine embryos** are highly sensitive to temperature and cryoprotectants, which may be due to their **high lipid content.**
- A disadvantage of PMSG is the high incidence of unovulated follicles.
- Superovulation is not very effective in the horse.
- The successful birth of the **first foal** by **IVEP** (*in-vitro* embryo production) reported in **1991** by **Bruck *et al.,***
- Embryo culture media supplemented with a **large protein molecule** to decrease the surface tension, thereby reducing embryos tendencies to float or adhere to plastic or glass surface.

» Embryo flushing media - BSA (Bovine serum albumin) is usually added at (0.3 to 1%), but concentrations from 0.1% to 50% have been used or fetal calf serum (1 to 10%) is used.

» Good quality embryo appears **Translucent**

» Animal having 3 or more than three ovulation (>3 CL) following gonadotrophin treatment is considered as superovulation responded **Cow**.

» Animal having 2 or more than two ovulation (>2 CL) following gonadotrophin treatment considered as superovulation responded **buffalo**.

» **Two commercial products of PMSG**

» Folligon (Intervet, Holland); Trophovet (Indian immunological)

» Presence of more numbers of unovulated follicles has been found on the day of flushing in PMSG treated animals. These unovulated follicles have been presumed to be those which continue to grow due to a longer biological half-life of follicles secrete appreciable quantities of estrogen affecting the quality of embryos.

» Commonly used superovulatory hormones are : FSH, PMSG and hMG

» FSH has been used at the dose rate of **30 to 50 mg** for superovulation in buffaloes.

» Superovulation treatment is initiated during mid-luteal (8-12 days) or late luteal (13-15 days).

» Donor animal must have calved atleast 60 days back.

» Best time to initiate superovulatory treatment is **90-100 days post calving**

» For repeated superovulation, donors should be selected **at least 60 days after** the first superovulatory treatment

» In buffalo embryos in the oviduct remains for about 96 to 108 hrs (4 to 4.5 days) then enter into the uterus at the **early morula stage**

» The embryo is deposited deep into the **uterine horn ipsilateral to the ovary bearing CL**.

» The conception rate through ET in buffaloes is 10% which is much lower than cattle (50-70%).

» **Superovulation** is a prerequisite for successful application of embryo transfer, particularly in species with a physiologically low ovulation rate (cattle, sheep and horses)

» Protein supplementation of the flushing medium is important in order to **prevent adhesion of the embryos to the plastic ware** (filters, dishes and tubing).

» The flushing medium is transferred to a specially designed filter with a **pore size of 70µm** allowing somatic cells (e.g. red blood cells) and certain debris to pass through while retaining the embryos (150-200µm in diameter).

» Among the fertilized eggs recovered on **day 6-7**, most embryos are at the compact morula, early blastocyst, blastocyst or expanded blastocyst stages.

» In cattle, embryos are always transferred to the uterine horn ipsilateral to the ovary bearing the CL in order to block the luteolytic mechanism.

» In **mares**, the embryo enters the uterus at the morula stage, approximately 51/2 days after ovulation and, in an embryo transfer programme; embryos are generally recovered **6-8 days after ovulation at the morula or blastocyst stage.**

» In the ewe and doe goat, embryos are collected **3-7 days after oestrus.**

» **In sow:** 20-30 embryos are transferred to the **tip of the uterine horn.** Since they will subsequently migrate into the contralateral horn, bilateral transfers are not necessary.

Veterinary Obstetrics

» **Progesterone** content of the blood plasma declined from **19 to 6 ng/ ml in the last month** before calving and then very low level of **0.5 to 3 ng/ml at calving.**

» In mare **waxing of teat** usually observed in **95% of mares 6 to 48 hrs before foaling.**

» In the **mare and ewe the corpora lutea are not necessary** during the latter half of pregnancy and they involute.

» **Breech presentation:** Posterior longitudinal presentation, dorso sacral position, with the hind limbs retained or extended beneath the body.

» **Poll presentation:** Anterior longitudinal presentation, dorso sacral position, with the head flexed beneath the neck.

» When the foetal head starts through the vulva and at this point the greatest and strongest abdominal straining in the birth process usually occurs.

» Stages of Labour

» First stage of labor - Contraction of uterus & cervical dilatation

» Second stage of labor - Expulsion of fetus

» Third stage of labor - Expulsion of fetal membrane and involution of uterus

» **Early parturition, twin pregnancy or a shortened gestation period** has frequently been observed associated with retained placenta.

» In dog and cat the fetal membranes are usually expelled irregularly between the foetuses

» Domestic animals with the **exception of the mare** generally eat the expelled fetal membranes.

» The rapid involution of the endometrium in the mare and sow is probably related to the simple diffuse placental attachment.

» Dystocia is much more common in primipara than in pluripara.

» The incidence of dystocia is greater in pregnancies that **terminate early due to uterine disease, foetal death and twining** or **terminate after a prolonged gestation period due to excessive size of the fetus.**

» The term **dystocia** comes from the Greek and means "difficult birth".

» **Eutocia** is safe, easy, natural or physiological parturition.

» Dystocia often results at parturition due to the increased size of the fetus or its parts.

» Dystocia due to the **small size of the dam** is frequently observed in primipara.

» Twisting of birth passage is a common cause of dystocia in the dairy cow and a less common cause in the other species.

» Primary uterine inertia is seen most often in the dog: secondary uterine inertia is seen in all other species of animals.

» Secondary uterine inertia is frequently followed by uterine infection, septic metritis, RFM and failure of the normal involution of the uterus.

» The weight of the fetus in unipara animal is between 6-10% of the dame's weight.

» Incidence of dystocia in **cattle is about 3.3%** and in **horses the incidence is about 1.1%.**

» **Ring womb** in ewe: failure of cervix to dilate.

» In uniparous animals twining is considered a maternal cause for dystocia since it is usually due to double ovulation.

» The incidence of dystocia in posterior presentation of the fetus in unipara is high

» If the fetus presented in a **dorso-ilial or dorso-pubic position**, torsion of the uterus may be present.

» The long extremities of the foetus tend to predispose the mare to dystocia.

» **Abnormal posture of the head and neck** is one of the most common causes of dystocia in mares.

» In mare transverse ventral presentation is not uncommon.

» **Dorso-ilial or dorso-pubic positions** are occasionally found in the mare due to the fetus falling to rotate to the normal dorso-sacral position early in parturition.

» **Wry neck is seen most commonly in the equine fetus** in which it may or may not be associated with transverse pregnancy.

» In cattle: Twin dystocia and dystocia due to uterine torsion are common: uterine inertia and failure of the cervix to dilate are occasionally noticed.

» **In sow:** The incidence of uterine inertia is fairly high

- **In dog:** Uterine inertia, either primary or secondary, is a frequent cause of dystocia
- **In dog:** Poll presentation and lateral deviation of the head and neck are quite frequent causes of dystocia.
- **In cat:** Breech presentation is a common cause for dystocia
- Heifers affected with obturator paralysis are usually seen in hip lock condition
- **Dystocia due to primary uterine inertia:** Is observed more frequently in dog and older dairy cow and sow, this is due to the lack of tone or failure of the uterine muscle to contract.
- **Dystocia due to secondary uterine inertia:** seen in all animal species this is characterized by exhaustion of the uterine muscle.
- Since infection of the uterus is usually present, the ventral abdominal approach for the caesarean operation in indicated.
- **Dystocia due to fetal emphysema:** observed in all animal species and is usually associated with a prolonged dystocia of 24 to 48 hrs duration. It is commonly seen in rotated bicornual pregnancy in mare; in bovine it is commonly seen in unicornual twins.
- In uniparous animals uterine torsion can cause fetal death and maceration with adhesions between the uterus and the other abdominal viscera.
- **Foetal maceration**: is often observed in animals at term when a dystocia has been overlooked or **neglected for 3 to 10 days.**
- In some severe 270° to 360° torsion in cattle it may be noticed that the dorsal commissure of the vulva is pulled forward and to the left or right.
- If the torsion is **greater than 180° to 240°** it is usually impossible to pass the hand through the twisted portion of the birth canal.
- The fetus is usually in **dorso-ilial or dorso-pubic position** as **most torsion in cattle is 180° to 240°.**
- True fetal giantism is seen most commonly in the cow and occurs only as a result of a prolonged of over 300 to 310 days gestation.
- In fetal giantism cases **hairballs** may be found in the amniotic cavity.
- Dystocia due to twins is most common in dairy cow. Twin dystocia is rare in the mare as twins almost always are aborted.
- The prognosis in transverse ventral dystocia in the **mare is fair to good** depending upon the condition of the mare & her genital tract.
- The prognosis of dystocia due to dog sitting posture condition in the mare should be **guarded to poor.**

» Posterior presentation is considered pathological in all animals **except in multiparous animals.**

» The fetal mortality in posterior presentation is high.

» **Deviation of the forelimbs:** are relatively common causes for dystocia in uniparous animals.

» **Wry neck is seen in equine** but rarely in bovine foetuses. It usually occurs in transverse bicornual pregnancy in the mare in which movement of the foetal head and neck is restricted or prevented during most of the gestation period.

» Since cesarean section is more difficult to perform successfully in the mare than in the other domestic animals, fetotomy or forced extraction is methods of choice in this species.

» Fetotomies are not performed in the sow, bitch and cat because caesarean section is easier and safer.

» Flexion of the head and neck causes dystocia in all animal species. Flexion of the limbs usually results in dystocia in uniparous animals but only rarely in multiparous animals.

» The principal purpose of obstetrical operation is **to deliver a viable fetus** and **to prevent injury to the dam**.

» **Obstetrical operations:** divided into four major classification: Mutation, Forced extraction, Fetotomy or embryotomy and Cesarean section or Laparohysterectomy

» **Mutation:** it is defined as those operations by which a fetus is returned to a normal presentation, position and posture by repulsion, rotation, version and adjustment or extension of the extremities.

» **Mutation operations are:** Repulsion or Retropulsion, Rotation, Version and Extension and adjustment of the extremities

» **Repulsion or Retropulsion:** Pushing the fetus out of the maternal pelvis or birth canal into the abdominal cavity and uterus, where space is available for the correction of the position or posture of the fetus and its extremities.

» **Rotation:** is the turning of the fetus on its long axis to bring the fetus into a dorso-sacral position.

» **Version:** Is the rotation of the fetus on its transverse axis into a anterior or posterior presentation.

» Version is done most **often in the mare** in transverse presentation.

» In mare partial embryotomy is often indicated before version is attempted in transverse presentation.

» **Schistosomus reflexus** - Marked ventral curvature of the spine

» **Campylorrachis scoliosa** - Lateral curvature of the spine

» **Persomus elumbis** - Lack of vertebrae and spinal cord

» **Persomus horridus** - Marked double S- shaped lateral twisting of the vertebrae.

» **Perosomus acaudatus** - Lack of coccygeal vertebra and deformed sacral vertebrae with a sunken perineal region

» **Spina bifida or rachischisis** - Absence of dorsal portions of the vertebrae or arches often in the lumbar or sacral region with defective rear limbs and tail and paralysis of rear parts.

» Conjoined twins in which the components or component parts are symmetrical called **diplopagus monsters** or "Siamese" twins.

» **Janiceps:** is a monster with two faces on opposite sides of the head

» The infection most commonly observed in association with RFM in the mare is Streptococcus genitalium or zooepidemicus.

» FSH: Necessary for the growth of the graffian follicles and the production of estrogens in the ovary.

» LH: Causes ovulation and growth of the CL from the granulosa cells of the rupture Graafian follicle.

» Sheep and Rats **prolactin** is the luteotropic hormone,

» Prolactin also called as **hormone of broodiness** in hens.

» The principle use of pituitrin, posterior pituitary extract or oxytocin is to **hasten the contraction and involution** of the uterus after a dystocia or prolapsed of the uterus.

» The estrogen causes the initial budding and growth of the duct system in mammary gland.

» Progesterone causes further duct growth and alveolar development in mammary gland.

» In certain species, such as **goats**, estrogen alone induces complete udder growth and lactation.

» The **release of oxytocin does not occur at milking time in goats** and is not essential for the complete milking of the of the goat udder

» Estrogen is produced in animals by the cells of the **theca interna of the Graffian follicle**

» Estrogen **increases the rate of migration of leucocytes into the uterine lumen** and thus increases the bactericidal activity of the uterus during estrum.

» The acceptance of the male during estrum is due to the effect of estradiol on the CNS.

» In cattle post-estrual bleeding is associated with oestrogen withdrawal.

» In the **Ram the processus urethrae** does not enter external os of the cervix of the ewe

during coitus but is responsible for forcibly spraying semen over the cervix and cranial portion of the vagina.

» In most of the domestic animals ova require **3 to 5 days** to pass through the oviduct into the uterus.

» The **uterus is not a highly favourable site for sperm cell survival** because the presence of spermatozoa stimulates the invasion of leucocytes and the phagocytosis of spermatozoa.

» The symptoms of estrum in the cow are characterized by a great amount of homosexual behaviour.

» **Ovarian adhesion** due to rough manipulation of the ovary was a common cause of permanent sterility.

» Granulosa cell tumor is the most common one in cattle (Guernsey cows).

» The cervix appears to be more resistant to infections than either the uterus or the vagina

» Most case of cervicitis originate at the time of or following parturition and often are associated with a metritis

» **Cystic vestibular or Bartholin's Glands:** It causes no problems at parturition nor does it interfere with conception.

» The **appendix testis** nearly always present as a small protruding structure on the cranial pole of the **equine testis.**

» Only in the bitch **vaginal process** remain visible in the adult animals.

» The **Mare** and **some Dogs** have nearly **round pelvic inlets.**

» The **Sow** and **Cow** have the **elliptical pelvic inlets**

» In the **Saanen and Toggenburg** breeds of goats the incidence of intersexes varies from 5.8 to 14.9 %.

» Intersexes in pigs are common but not as common as in goats.

» **Pseudohermaphrodite male animals**: are genetic females, externally a characteristic **"fish hook vulva"** with a **prominent "clitoris"** or phallus is present.

» During cryptorchid condition the **Leydig cells are not affected** so **sexual activity is normal** or even exaggerated in bilateral cryptorchids.

» **Torsion or rotation of the descended testis** on a horizontal axis is observed most commonly in stallion.

» At 60 days the fetal crown-rump length (CRL) in calf is 6 cm

» In a cow the diameter of gravid horn at 120 days is 12.5 to 18 cm

» In sow the pregnancy diagnosis can be done by **detection of oestrogen sulphate in**

the blood from 20 days of gestation but maximum concentrations present at around 24-28 day of gestation

» Freemartinism can be diagnosed by **karyotyping and vaginal length**

» Predisposing factors for cystic ovarian degeneration are: **High milk yield, hereditary** and **high protein diet**

» The major causes for Repeat breeding : Fertilization failure Early embryonic death

» Fertilization failure for **about 15%** of reproductive wastage in normal cows

» Repeat breeder cow the Fertilization failure may **be higher at 28-44%**

» For best conception rates the insemination must be done at **middle to end of the standing** oestrus.

» **Abortion:** Expulsion of a dead or live recognizable size fetus at any stage of gestation (45-60 days onwards to parturition).

» **Premature birth:** Expulsion of weak and viable fetus 15-20 days or 30 days prior to the expected date of parturition and it may die shortly after birth.

» **Still birth:** Expulsion of a dead fetus at the time of parturition (Full term) especially in swine.

» **Habitual abortion:** Repeated abortions at a particular month of gestation

» **Threatened abortion:** At any stage of gestation, the animal may show the symptoms of abortion but not abort.

» **Early embryonic death:** Unseen expulsion of ova, embryos or foetuses is called as early embryonic death.

» The main mode of transmission for Brucella abortus is by **ingestion**

» Bucellosis causes abortion in **last trimester of pregnancy in cattle**

» **Erythritol** is essential for the growth of Brucella abortus.

» For brucellosis female calves vaccinated at the age of 3 to 7 months or more ideal age is 3 to 6 months.

» Bull calves should not be vaccinated by Brucell strain 19.

» Recently the **card test** is employed as a rapid, sensitive accurate test for field screening of brucellosis.

» Rapid plate agglutination test is performed routinely in brucellosis infected cattle

» **In non-vaccinated cows:** 1:50 reaction is a suspicious reaction and 1:100 is positive

» **In vaccinated cow :** 1:100 reaction is a suspicious reaction and 1:200 is positive

» Listeria monocytogenes: causes abortion in **last trimester without clinical illness (**

7^{th} – 9^{th} month of gestation)

» Vibrio foetus venerealis : in cattle spread through at the time of **coitus or AI**

» Vibrio foetus venerealis: in cattle **commonly causes early embryonic death** and occasionally late abortion from 4^{th} month to term.

» Site of predilection in bull for Vibrio foetus venerealis infection is **penis** and **prepuce**

» Bovine herpes virus causes: **Necrotizing endometritis**

» Epizootic Bovine Abortion: caused by Chlamydia psittasi. It causes abortion during 6^{th} to 8^{th} months of gestation.

» Mycotic or fungal abortion is observed in **5^{th} to 7^{th} month of gestation.**

» Fetal mummification **does not occur** in the first trimester of gestation.

» The hematic type of mummification is most commonly noticed in cattle.

» Papyraceous type of mummification occurs in other species.

» Mummification of bovine fetus is observed during 3^{rd} to 8^{th} month of gestation most commonly in 4^{th}, 5^{th} and 6^{th} months.

» Administration of corticosteroids is not effective in fetal mummification.

» Long existing extrauterine fetus becomes quite firm and encapsulated with calcium laid down in the capsule called as **Lithopedions.**

» True extra uterine pregnancies are **only found in human beings due to the type of placenta.**

Andrology

» Testosterone produced by the Leydig cells is **not affected by temperature**

» Spermatozoa number in the testis are highly correlated with **testes weight, testes diameter and testes size**

» Spermatozoa removed from the cauda epididymis exhibited normal fertility

» Epididymal spermatozoa are **resistant to cold shock**

» The clear secretions dribbling from the sheath or penis during sexual stimulation in bull, stallion and ram originated from the bulbourethral/Cowper's glands

» Sperm cell constitutes **about 10% of bull semen by volume**

» By teasing males before service the semen and concentration of spermatozoa are increased

» The sticky, gelatinous, tapioca-like material secreted from the Cowper's glands in the Boar makes about **20 to 30%** of the total porcine ejaculates

- Boars may masturbate by increasing their penis into the preputial diverticulum and ejaculating there, resulting in a condition called **"balling up"**
- In **bulls** the only significant tumour is the **transmissible fibropapilloma.**
- In **stallion tumors** of the penis are uncommon and when present are usually **squamous cell carcinomas of low malignancy**
- The **TVT** is the most commonly seen on the **penis and prepuce of dogs**
- Paralysis of the penis is seen in **bulls** with **rabies** and in the **horses** during **later stages of dourine**
- Testicular hypoplasia condition in cattle is due to a single recessive autosomal gene with incomplete penetrance
- **Dag defect:** Common in **Danish jersey breed cattle.** In this condition bulls are **sterile**
- **Corkscrew sperm defect:** Non genetic defect, this defect due to an irregular distribution of the mitochondrial sheath together with a high incidence of persistent proximal droplets
- **Knobbed acrosome defect:** This defect is due to autosomal recessive gene in HF bulls. Complete sterility or infertility is observed in this condition.
- In stallions abaxial attachment of the mid piece to the head of the spermatozoa is commonly observed and this is usually associated with infertility in stallions and boar, as it often in the other species of animals.
- The male reproductive tract is developed from the **Wolffian duct and body of Mesonephric tubules**
- The male reproductive organs consist of: two testes which are present in the scrotum, ducts, accessory sex glands, penis and prepuce
- The testis produces spermatozoa and male sex hormone (androgens/testosterone).
- **Primary male sex organ** is gonads - the testes.
- **Accessory sex organ**- the epididymis, ductus deferens, vesicular glands, prostate gland and bulbourethral glands.
- **Copulatory organ** is penis
- **Urogenital system:** is formed mainly from *mesodermal tissue* that in early embryonic life forms the *nephric* and *genital regions*
- **Remnants of the paramesonephric** or **mesonephric ducts** may persist in the adult male as the **uterus masculinus** and **appendix testis**
- **Testis cords, rete testis cords** and **tunica albugeniea** are formed early in the fetal period.
- **Primary medullary cords** are characteristic of the **early male gonad**

» Development of the external genitalia in males is hormonally controlled by androgens

» Testis during the foetal life is located in the abdominal cavity, they pass through the abdominal inguinal canal into the scrotum

» **Enlargement of the gubernaculum** and its disappearance play an important role in testicular descent

» **Intra-abdominal pressure** in the foetus also determines testis descent

» Androgen from foetal testis favours testis descent

» Failure of testis to descent into the scrotum is called **cryptorchidism**

» The retained testis is called as **cryptorchid testis**.

» **The scrotum** is a bilobed sac or pouch (derived from the skin and fascia) and is the external part of male reproductive system which encloses the testis

» **Scrotum**: is located between the thighs except in case of boar and tom cat.

» **In boar and tom cat** testes is located caudal to the thighs, caudal and ventral to the ischiatic arch.

» Scrotum externally composed of skin which is relatively devoid of hair except in ram, buck and tom cat (male cat).

» **Dartos muscle** is an unstrapped muscle and **divides the scrotum in two halves.**

» Scrotal ligament is absent in bulls

» Testis and epididymis are fixed in scrotum by means of **scrotal ligament** which is attached near the tail of the epididymis and mesorchium

» About **75% of the testicular mass** is composed of seminiferous tubules

» **Scrotum, cremaster muscle and pampiniform plexus** maintains the testicular temperature

» The scrotum becomes flaccid and elongated due to relaxation of the **dartos and cremaster muscle** under hot climate. It becomes contracted and wrinkled during cold climate

» **Blood supply to the scrotum:** External pudental artery (also Internal pudental artery in boar and cat)

» **Nerve supply to the scrotum:** Genital nerve which is a branch of genito-femoral nerve arising from **2nd to 4th lumbar nerve** and **perineal nerve.**

» **Synonyms for testis** : Orchium, male gonad

» **Testes are intra-abdominal in**: elephant, whales, seal, dolphin, birds and rhinoceros (testchondas)

» **Tunica albuginea**: it is a dense, thick connective capsule from which septa radiate to

the mediastinum testes except in stallion to form the lobules of the testis.

» **The sertoli cells** are also called as: Nurse cells or Pillar like cells or Sustantacular cells

» **The interstitial cells (Leydig),** which lie between the seminiferous tubules, secrete male hormones

» There is **no mediastinum testis in the stallion** as is present in other animals

» The consistency of the testis is usually **turgid**

» Testicular cells is composed of

1. Germinal cells

2. Parenchymal cells or testicular somatic cells Sertoli cells

» The testis is richly supplied with blood by the spermatic artery/ testicular artery, a branch of the abdominal aorta

» Seminiferous tubules **remain solid until just before puberty**

» Seminiferous tubules are connected to efferent ductules via a network of ductless called **Rate testis**

» The **process of testicular descent is passive**. There is no contractile tissue present in the gubernaculums to actively pull the gonad through the inguinal canal.

» The gubernaculums forms the **ligamentum testis** and **scrotal ligament**

» The animal in which the testicle descends in to the inguinal canal but not into the scrotum is called **high flanker**

» For effective functioning, the testes have to be kept at a **temperature of 2-5 °C lower than the body temperature**

» Scrotal skin is **lacks or devoid of subcutaneous fat.**

» Scrotal skin is **richly supply with large adrenergic sweat glands.**

» Sweating allows scrotum to be cooled by evaporative heat transfer

» **Dartos muscle:** contracting in cold weather to hold the testes against the body and by relaxing in warm weather, it is the principal thermoregulatory part of the testis

» Action of dartos muscle in stallion is enhanced by presence of smooth muscle in the spermatic cord and tunica albuginea

» **External cremaster muscle:** It contracts and relaxes, creating a **'pumping action' on the pampiniform plexus**, thus facilitating blood flow and enhancing cooling efficiency.

» In the proximal end of testis, testicular artery is coiled and is surrounded by network of spermatic vein. This arrangement is called as pampiniform plexus

» Seminiferous tubules are **not penetrated by blood and lymph vessels**

- Myoid cells barrier is poorly developed in bull, ram and boar
- The epididymis is the **store house/ warehouse of spermatozoa**
- The cauda epididymis contains **about 75%** of total epididymal spermatozoa
- The tail of the epididymis acts as a reservoir of fully mature sperm and becomes turgid with stored sperm in sexually active animals
- **Length of the epididymis varies with the species:** It is about 20 metres in stallion; 30 metres in bull; 50 metres in boar and ram
- Oxidative phosphorylation occurs in **mid piece** of the spermatozoa
- Terminal fusiform enlarged glandular portion of vas deferens is called as ampulla
- Ampulla is absent in **dog and cat**
- Accessory sex glands are called as: **secondary andrological organs**
- In **bulls about 12-17 million spermatozoa** are produced per gram of testicular tissue daily
- The ampullae open in the cranial portion of the pelvic urethra through a round prominence called **colliculus seminalis**
- **Seminal vesicles (Vesicular glands)**: Paired accessory sex gland located in the floor of the pelvis, dorsal and lateral to the ampulla or neck of the bladder
- In ruminants and boar, Seminal vesicles is a lobulated gland in which lobules have small central dilatation
- Seminal vesicle in all domestic animals is vesicular except in stallion
- **In stallion,** structure of **seminal vesicle is more bladder like** and glands are located on the walls.
- In bull : Vesicular glands are **lobulated**
- Seminal vesicle absent in dog and cat
- Secretion of the seminal vesicle adds nutrients, volume and buffer to the semen.
- Seminal vesicle in all domestic animals do not store spermatozoa
- Seminal vesicle secretes vital biochemical secretions. The seminal vesicle is the site for production of **fructose and citric acid.**
- The **fructose is the main source of nutrition**/energy for the spermatozoa motility
- The seminal vesicle is the main **source for the production of liquid part of ejaculate** (Vesicular fluid)
- The liquid secretion of seminal vesicle **helps in lubrication of urethra for movement of spermatozoa.**

- **Final volume of semen** is related to the quantity of secretion of seminal vesicle
- The secretion of the vesicular glands makes up **about 50% of the total semen ejaculate**
- **Vesicular glands of the stallion:** are elongated pear shaped sacs and the secretions of these glands constitute gel of the ejaculation
- In boar the vesicular glands are large bag like and contains highly viscous fluid
- **In boar vesicular glands** secretion has high inositol contents and also contains ergothionine.
- **In bulls** the secretion of vesicular gland is **yellow due to high riboflavin contents**
- **Prostate gland:** located in the floor of the pelvis or around the neck of the urinary bladder or cranial portion of the pelvic urethra or caudal to the neck of the bladder
- **In Ram:** the prostate gland has no body only pars disseminata is present
- Prostate gland in bull has two parts (disseminated portion) pars disseminata and body of prostate (Pars propria).
- Prostate gland secretion: **more quantity of serous** and less quantity of mucous secretion
- Prostate gland in stallion has two lateral lobes in the cranial end of pelvic urethra and are connected by a structure called isthmus
- Pars disseminata is quite extensive in boars as in case of bull and ram.
- In dog the pH of the prostatic secretion is 6.5 and there are no reducing sugars. However, canine prostate secretion contains citric acid and acid phosphatase.
- Canine prostate secretion has **high concentration of Zinc**
- Bulbourethral glands (Cowper's glands) are paired glands located on either side of the pelvic urethra near the ischiatic arch.
- Bulbourethral glands (Cowper's glands) are **ovoid** in bull, stallion and ram
- Bulbourethral glands (Cowper's glands) are **large and cylindrical** in boar
- Bulbourethral glands are absent in dog
- The typical rubber like white substance is filled in the Cowper's glands of the boar that is essential for gel formation in boar semen, this is due to the presence of **sialomucin** content.
- **Uterus masculinus:** It is a rudimentary structure and remnant of the paramesonephric duct in male and is located between ampullae and seminal vesicles
- **50-70 % of bulls have uterus masculinus**
- The urethra in males is the common passage for the excretion of urine as well as for the transportation of semen

- The pelvic urethra is enclosed by heavy urethral muscle or Wilson's muscle which helps in ejaculation and micturition by its forcible contraction.
- Penis it extends from ischiatic arch to the umbilical region **except in tom cat.**
- Terminal portion of penis which is freely moving within the sheath is called as glans penis
- In bull, ram and boar the penis is characterized by S-shaped curve
- The sigmoid flexure is post-scrotal in bull and ram; pre-scrotal in boar and camel and absent in stallion
- The ischio-cavernosus muscle or erector penis muscle is a short paired muscle and helps in penile erection by its compressing and pumping action.
- The retractor penis muscle is a smooth muscle and arises from sacral or 1st or 2nd coccygeal regions
- The retractor penis muscle draws the penis back into the sheath after ejaculation by acting on sigmoid flexure
- **The Bulbocavernous muscle** extends from ischiatic arch to glans penis.
- The sigmoid flexure is an **'S'** shaped bent of penis which is characteristically found in cattle-bull, buffalo-bull, boar, ram, buck and some wild animals like giraffe.
- **Os-penis (Ospriapi or Baculum)** the os-penis is characteristically found in male dog, ferrets and mink. It is occasionally present in tom-cat
- **Cork screw penis:** it is the modified structure of external extremity of penis which is a **characteristic feature of boar** and helps in intromission of boar penis in the genitalia of sow (Cervical canal in sow is cork screw like).
- **The phallus** is the external extremity of male genitalia in place of penis which is a characteristic feature of boar. This helps in ejaculation
- **The phalli** are the external extremity of male genitalia in place of penis which is a characteristic feature of **ducks and geese**. This helps in intromission.
- **The penile papillae** are located at anterior portion of penis which is a characteristic feature of tom-cat, hamster, house-mice and rat. This probably helps in ovulation
- **The urethral sinus** is located around the end of penis which is characteristic feature of stallion. This contains urethral sinus diverticulum.
- The urethral sinus diverticulum is located at dorsal aspect of urethral sinus which is characteristic feature of *stallion*. This helps in accumulation of debris and formation of smegma, called as **BEAN** which is the main source of pheromones.
- **The urethral process is a filliform appendage (vermiform appendage)** extending from the anterior portion of glans penis which is a characteristic feature **of ram, buck and giraffe**

» The penis of the bull is fibroelastic and the erectile tissue is too less compared to stallion.

» The penis of stallion has large amount of the erectile tissue

» In stallion the retactor penis muscle is not as strong as in bulls

» In boar there is no glans penis but cranial portion is twisted counter clockwise

» The proximal part of dog penis i.e. bulbus glandis usually becomes engorged with blood after the penis enters the vagina of the bitch and the withdrawal of the penis is not possible for same time after service until erection subsides

» In cat the bulbus glandis is absent; the glans penis is also absent; but the terminal part (about 1 cm) contains several spines (about 120) pointing backwards. Because of the pain caused by these spines the queen emits a loud cry after mating.

» Penile bone also present in **foxes, ferret, mink, raccoons** and **hedgehogs**

» Glans penis has two parts, the **pars longa glandis** and **bulbus glandis.**

» **In dog:** Bulbus glandis expands greatly at the time of erection and prevents withdrawal during ejaculation. Vagina also contracts over the penis. This results in coital lock or copulatory tie

» In Stallion: preputial ring are present

» Swine and ruminants urinate inside the prepuce

» Horses, dogs and cats extend the penis beyond the sheath and urinate

» The reflex centers for erection and ejaculation are located in the **lumber portion** of the spinal cord

» The sertoli cells (sustentacular cells) are derived from **mesonephric tubular epithelial Cells**

» **Rut/Musth:** is the certain definite period of sexual excitement in some wild animal (e.g. deer, camel and elephant). In these animals spermatogenesis occurs only in this period.

» The genital swelling forms **labia majora** and genital fold forms **labia minora**

» **Puberty:** the age at which the first ejaculate contains **50×10^6 (50 million) sperms** with at least **10% progressive motility.**

» **Puberty** may be defined as the age or time at which the generative organs become functional and reproduction may occur

» Puberty in male is characterized by appearance of **secondary sexual characteristics, sexual desire, ability to copulate** and **presence of viable spermatozoa in semen**

» Puberty does not indicate full reproductive capacity

» Males attains full potential of reproduction at the time of attainment of sexual maturity

- The improved nutrition and good management starting at earlier age enhances the onset of puberty
- Body weight plays more important role than the age for attaining puberty and sexual maturity.
- **The scrotal circumference** is directly proportional to the intensity of sex desire and spermatozoa production
- **Sex desire:** Depending on the available testicular surface area containing number of leydig cells - site of androgen secretion
- **Spermatozoal production:** Depending on the available testicular surface area containing number of seminiferous tubule
- The cross breeding causes early puberty and sexual maturity.
- Animals located in tropical regions are late in attaining puberty and sexual maturity
- Seasonal influences are there in sheep and buffaloes **hot season delays the onset of puberty.**
- If the male and female are kept together they mature earlier
- Development of medullary cords occurs earlier in males than in females
- Excessive and prolonged dosages of androgens given early in fetal life may cause masculinization of the external genitalia organs of the female fetuses
- LH stimulates the growth and development of interstitial cells or Leydig cells in between the seminiferous tubules of the testes and the secretion of the testosterone and androgens from these cells.
- FSH also interacts with receptors on sertoli cells to cause production of androgen binding protein (ABP), conversion of testosterone to dihydrotestosterone and estrogen, completion of sperm release (spermiation) and secretion of inhibin.
- Although much of the testosterone secreted into the seminiferous tubules is converted into dihydrotestosterone (DHT) by the enzyme *5α reductase*, some of the testosterone gets converted to estrogens by the enzyme aromatase.
- High levels of estrogens found in stallion urine are mainly due to estrogen produced by interstitial cells and or sertoli cells of the testes.
- **Sertoli cell tumor of canine** testes is common and they produce high levels of estrogens which cause **feminization** and testicular atrophy in males.
- The **inhibin** secreted into the blood stream has a negative feedback effect on FSH but not on LH secretion
- **In stallion, androstenedione** is a major androgen
- **99% of the circulatory testosterone is in bound form** and 1% free testosterone from circulation enters the target cell.

- In the cytoplasm of target cells, testosterone is converted by 5-α reductase into dihydrotestosterone which is biologically active form.
- **Spermatocytogenesis** is the proliferative stage in which primitive germ cells are multiplied by a series of mitotic divisions followed by the meiotic divisions which produce the haploid stage spermatid.
- Metamorphosis of spermatid into spermatozoa, is called as spermiogenesis
- The entire divisional process of spermatocytogenesis, from spermatogonia to spermatid takes approximately **45 days in bulls.**
- **Spermatogenic wave:** the distance between two similar cellular associations in the seminiferous epithelium is called spermatogenic wave.
- **Spermiation:** release of formed germ cells into lumen of the seminiferous tubules is known as spermiation
- Axonemal components of tail originate from the distal centriole consists of 9 pairs of microtubules arranged radically around 2 central filaments.
- **Generally good bulls** donate semen within **3 minute**
- The spermatocytes are most sensitive to irradiation while Leydig and Sertoli cells are quit resistant
- Steroidogenesis is not affected much by the **X-rays**. The testosterone level is maintained as such
- **High ambient temperature** will cause **testicular degeneration** which affects the spermatogenesis
- The temperature more than 41 °C has detrimental effect on spermatogenesis
- Boars produce 2 attractants: one from **preputial pouch** and in **saliva** secreted from submaxillary salivary gland.
- The active components of the saliva are **3 alpha androstenol and 5 alpha androstenone.** Both the compounds have musk like odour
- **The Flehmen's reflex** is noticed in all animals **except swine**
- In stallions, the penis is vascular in nature and it is **not having sigmoid flexure**
- **Penile protrusion:** During this period, the **dribbling of the secretions of Cowper's gland is noticed in bulls**
- Successful entry of the penis into the vagina is called as **intromission**
- **Short copulators:** The animals like bull and ram will ejaculate in short period of time (within one or two seconds) and are called as short copulators.
- **Sustained copulators:** the boar and dog will take longer duration up to 30 minutes for

ejaculation and are called as sustained copulators.

» The stallion is **intermediate copulator** (20 seconds to 1 minute) with regard to duration of copulation.

» In bull and ram the ejaculation is stimulated by warm temperature of the vagina. But in stallions and boar, the vaginal pressure is important when compared to temperature.

» **The Coolidge effect** can be defined as the restoration of mating behaviour in males that have reached sexual satisfaction when the original female is replaced by a novel female. In other words, a sexually satiated male can be re stimulated if exposed to a novel female.

» **Infertility**: Temporary loss of fertility in male characterized by reduced number of viable spermatozoa in the ejaculate is called infertility

» **Impotentia Coeundi:** Reduced to complete lack of sexual desire and ability to copulate

» **Impotentia Generandi:** Inability or reduced ability to fertilize the ovum due to pathology of testis, mesonephric duct and accessory sex glands

» Impotentia generandi may be of 2 categories

» Impotentia generandi associated with apparently normal semen production

» Impotentia generandi associated with abnormal semen production

» Libido is defined as the willingness and eagerness of a bull to attempt to mount and service.

» Paralysis of the penis is seen in bulls with rabies and in horses during later stages of dourine

» Balonoposthitis is common in bull, ram and dog, uncommon in boar and cat and rare in stallion.

» Balanoposthitis in rams is called "Pizzle rot" or "Sheath rot"

» The acrosomal defects in spermiogenesis are due to an **autosomal recessive sex linked** defect in Friesian bulls.

» The contractile mechanisms involved in the sperm transport are partly controlled by **Oxytocin**

» Oxytocin injected in male prior to ejaculation results **in hyperspermia** (increased ejaculate volume) and **polyzoospermia** (increased sperm concentration).

» In bulls and buffalo bulls the seminal fructose is mainly derived from vesicular glands. The initial fructose content in the semen is indicative of the capacity of Leydig cells and sex drive. The rate of fructolysis helps to determine semen quality.

» **Balanitis:** inflammation of glans penis

- **Posthitis:** inflammation of the prepuce
- **Balanoposthitis:** inflammation of the penis and prepuce
- **Phimosis:** unable to normally protrude the penis
- **Paraphimosis:** unable to retract the penis back into the prepuce after protrusion
- **Diphallus:** Double penis and normal copulation would be prevented because of forked configuration.
- **Phallocampsis:** deviation of penis either ventral or spiral or corkscrew type
- **Persistent frenulum:** A band of tissue extending from near the ventral tip of the penis to the prepuce
- **Priapism:** Persistent erection of penis in the absence of sexual stimulation occurs most often in the dog.
- Testicular hypoplasia is congenital or hereditary
- Testicular degeneration which is usually acquired
- **Testicular hypoplasia:** It is due to autosomal recessive genes with incomplete penetration
- Testicular hypoplasia is common in left side testis than the right side testis
- Testicular hypoplasia most commonly seen in bulls, rams, boars and stallions.
- Swedish Highland breed with white coat colour is commonly affected with testicular hypoplasia.
- Slight or mild cases of testicular hypoplasia may predispose to testicular degeneration.
- The Testicular hypoplasia: semen picture shows a lower concentration of spermatozoa **usually less than 70,000 per cubic mm**, low motility, many abnormal spermatozoa and the possible presence of a few giant cells
- In most of the Testicular hypoplasia, the sexual desire is excellent and coitus is prompt
- Treatment of testicular hypoplasia in animals has been unsuccessful
- Sertoli cell tumors produce excessive amount of estrogen.
- Leydig cell tumors produce excessive amount of testosterone and estrogen
- Testicular tumors are common in dog
- The consistency of the testes is generally **soft** and yielding in testicular degeneration
- The occurrence of large number of primary abnormality are more indicative of testicular degeneration
- **Hereditary defects of spermatozoa are**
- Returned tails and narrow heads, Knobbed acrosome defects, Cork screw defects,

Diadem defects, pseudodroplet defects and decapitated sperm defects

» **Dag defects:** up to 80% of the spermatozoa will have strongly coiled, folded or disrupted or split tails. This defect is recorded in Danish Jersey bulls

» **Knobbed acrosome defects:** Examination of Indian ink smear reveals the presence of highly refractive cyst formation in the anterior part of sperm head. The motility of the affected sperm is usually not affected. Mainly seen in Friesian bulls and is caused by an **autosomal recessive gene.**

» **Cork screw defects:** The mid piece of the affected sperm looks like a cork screw as compared to normal cylindrical appearance. It is due to an **irregular distribution of the mitochondrial sheath** together with a high incidence of persistent proximal droplets in the affected sperms

» **Diadem defects:** The affected sperm show a number of small red colored spots located along the nuclear ring, just like a row of pearls or necklace or diadem. This defect indicates **disturbed spermiogenesis** and recovery is common.

» **The pseudodroplet defects:** The defect is located in the centre of the mid-piece and appears as **rounded or elongated or irregularly thickened areas.** The mid-piece is often bent at the site of the defect.

» **The male tortoise-shell cat:** It is rare and it may have an abnormal sex chromosome constitution of **XXY** resembling the more common Klinefelter's syndrome in man. These male cats have small testes and are sterile due to failure of the seminiferous tubules to develop

» Intersexes in pigs are common but not as in goats

» In horses cryptorchids may be spoken as "ridglings" "rigs" or "originals"

» **Unilateral cryptorchidism** is more common and usually results in near normal fertility because of normal sperm production from the testis located in the scrotum

» **Cryptorchidism:** Spermatogenesis is completely inhibited by the elevation of the temperature of the affected testis. The interstitial or Leydig cells are not affected so sexual activity is normal or even exaggerated in bilateral cryptorchids.

» Cryptorchid animals should never be used for breeding.

» Cryptorchidism in the horse is inherited in a dominant manner while in the other species it is a recessive trait.

» Unilateral cryptorchidism more often affects the right testes *especially in dogs, possibly because the right testis develops in the embryo a greater distance from the scrotum*

» **Torsion of the testes:** is reported most commonly in the dog and stallion and rarely in the pig.

- **Animals with inguinal hernias** should be castrated and **not used for breeding.**
- **75 to 80 percent** of testicular pathology is related to testicular degeneration including fibrosis and orchitis.
- Testicular degeneration may be mild or severe and is **usually bilateral** as it is most commonly due to generalized disease processes.
- Testicular degeneration may develop very rapidly within a few days or hours; while testicular regeneration proceeds slowly over weeks and months.
- Testicular degeneration is most common in tropical climates and involving breeds originating in the temperate zones.
- Heat primarily affects the spermatids, the spermatozoa and the spermatocytes but **usually does not affect the spermatogonia.**
- Testicular biopsies, particularly in bulls, often result in focal areas of testicular necrosis because of vessel damage when a desirable size of testicular material is obtained.
- Testicular degeneration in bulls and rams with hyperkeratosis is caused by the chlorinated napthalenes.
- No natural cases of testicular degeneration due to auto-immunization have been reported.
- Testicular tumors are uncommon in most domestic animals except the dog and possibly old bulls.
- Primary testicular tumors are usually of three main types and originate from **the interstitial cells, the Sertoli cells** *and* **the germinal epithelium.**
- Testicular tumors are observed at any age but most commonly in dogs over five years old.
- The three principal testicular tumors in dogs are, **seminomas, sertoli cell tumors** (tubular adenomas), and **interstitial cell tumors.**
- **Sertoli cell tumors or tubular adenomas:** The tumor is often characterized by **marked feminization of the male** by the estrogens secreted by the tumor cells
- **Interstitial cell tumors or adenomas, or Leydig-cell tumors:** They are the most common tumors in old dogs.

Multiple Choice Questions

1. **The most commonly found uterine tumors in cow are .....**
   a. Fibromyoma b. Leiomyoma
   c. Adenocarcinoma d. All of the above

2. **In ultrasound examination of ovary, the follicles appear as**
   a. Anechoic b. Hyperechoic
   c. Hypoechoic d. Isoechoic

3. **Which of the following is normal cyclical physiological corpus luteum**
   a. Cystic corpora lutea
   b. Follicular cyst
   c. Luteal cyst
   d. Paraovarian cyst

4. **In ultrasound examination of ovary, the corpora lutea appears as**
   a. Anechoic b. Hyperechoic
   c. Hypoechoic d. Isoechoic

5. **In follicular cyst, the serum progesterone level will be ..... ng/mL**
   a. > 1 b. < 1
   c. < 2 d. > 2

6. **Drug of choice for follicular cyst in cattle**
   a. GnRH b. Progesterone
   c. FSH d. Prostaglandin

7. **Recommended dose rate of LH in treating follicular cyst in cattle is**
   a. 500 IU b. 3000 IU
   c. 1000 IU d. 1500 IU

8. **Drug of choice for luteal cyst in cattle**
   a. GnRH b. Progesterone
   c. FSH d. $PGF_2\alpha$

9. **Recommended dose of natural prostaglandin in treating luteal cyst in cattle is**
   a. 5 mg b. 25 mg
   c. 10 mg d. 15 mg

10. **Non dominant and non responsive follicular cyst can be treated by**
    a. GnRH
    b. Follicular aspiration
    c. hCG
    d. Potssium iodide

11. **Swiss cheese appearance of endometrium is a condition noticed in**
    a. Cystic corpora lutea
    b. Cystic ovary
    c. Delayed ovulation
    d. Paraovarian cyst

12. **The persistent corpus luteum is present in**
    a. Pyometra b. Mucometra
    c. Hydrometra d. All of the above

13. **Uterine adhesions are a common sequela of .....**
    a. Parametritis b. Perimetritis
    c. Sclerotic metritis d. All of the above

14. **White Heifer disease is caused due to .....**
    a. Single, recessive sex-linked gene
    b. Single, recessive sex-limited gene
    c. Single, dominant sex-linked gene
    d. Single, dominant sex-limited gene

15. **Segmental aplasia with imperforate hymen (White Heifer Disease) is common in**
    a. Jersey b. Guernsey
    c. Shorthorn d. HF

16. **Freemartinism commonly occurs in ..... type of fetus**
    a. Monozygotic twins
    b. Co- twin with same sex
    c. Heterozygotic twins
    d. All of the above

17. **Vascular anastomosis in freemartinism occurs as early as ..... days of gestation**
    a. 30 days b. 40 days
    c. 20 days d. 50 days

18. **Intersexes or hermaphrodites are common in ..... species**
a. Sheep and goat
b. Pig and goat
c. Cow and mare
d. Pig and cat

19. **Prominent clitoris and tuft of hair at the ventral commissure of the vulva seen in .....**
a. Freemartinism
b. Uterus unicornis
c. Double pseudocervix
d. Uterus didelphys

20. **Elongated ovary in ovarian hypoplasia is referred as .....**
a. Streak gonad
b. Broad gonad
c. Narrow gonad
d. All of the above

21. **Portion of ..... is absent in uterine unicornis**
a. Body of the uterus
b. Uterine horn
c. Cervix
d. All of the above

22. **Inflammation of the ovary is called .....**
a. Ovaritis
b. Oophoritis
c. Metritis
d. Vaginitis

23. **Complete failure of fusion of paramesonephric duct causes .....**
a. Uterine unicornis
b. Uterine didelphys
c. Both
d. None of the above

24. **In congenital lack of ..... of uterus, the PGFis not secreted and the cow remains in diestrum**
a. Myometrium
b. Endometrial glands
c. Perimetrium
d. Endometritis

25. **Inflammation of adjacent structures to uterus is called .....**
a. Parametritis
b. Perimetritis
c. Sclerotic metritis
d. Endometritis

26. **Inflammation of the endometrial layer of the uterus is known as**
a. Perimetritis
b. Puerperal metritis
c. Endometritis
d. Metritis

27. **Which degree of uterine infection is considered as silent killer of fertility**
a. Metritis
b. Subclinical endometritis
c. Endometritis
d. Parametritis

28. **Which of the following is not a postpartum event that is related to subsequent conception**
a. Uterine involution
b. Endometrial regeneration
c. Bacterial elimination
d. Twining

29. **Return to ovarian cyclical activity in the postpartum period is known as**
a. Postpartum ovulation
b. Ovarian rebound
c. Involution
d. Feedback mechanism

30. **What is the endometrial score given to the discharge containing ≤ of pus**
a. 0
b. 1
c. 2
d. 3

31. **During posrpartum period, reduction in feed intake is associated with increased circulating concentrations of ..... which influences uterine infection**
a. Urea
b. Creatinine
c. NEFA → Non esterified fatty acid
d. Calcium

32. **The test that is related to the diagnosis o subclinical endometritis is**
a. Per vaginal examination
b. Cytobrush
c. Metricheck
d. Vaginoscopy

33. Why intrauterine antibiotic therapy is not effective in clinical endometritis

a. Aerobic uterine environment
b. Cervical block
c. Presence of pus and debris
d. Endometrial degeneration

34. The incidence of camphylobacteriosis can be prevented by adopting

a. Natural bull breeding
b. AI
c. PG administration
d. Uterine lavage

35. The first dominant follicle is selected around ..... days after calving

a. 5 to 10 days b. 20-30 days
c. 10-12 days d. 45-60 days

36. Indicator hormone of pregnancy and identification of breeding time in bitches are

a. Relaxin and Progesterone
b. Progesterone and relaxin
c. Progesterone and Estrogen
d. Prolactin and $PGF_2\alpha$

37. One of the most contributing factors for pyometra in bitch is

a. Long luteal phase
b. Short luteal phase
c. Long follicular phase
d. Short follicular phase

38. Which of the following is a most common clinical presentation of canine herpes virus with respect to reproduction in the bitches?

a. Mummification of the fetus
b. Pyometra
c. Embryonic mortality and transient infertility
d. Wiping out of the entire litter within a few days of whelping

39. Level of serum progesterone in bitch at the time of ovulation is

a. 0.5 ng/ml
b. 1 ng/ml
c. 2 ng/ml
d. 4 to 10 ng/ml

40. Minimum level of progesterone is essential for maintenance of early pregnancy in bitch is

a. 0.5 ng/ml b. 1 ng/ml
c. > 2 ng/ml d. < 2 ng/ml

41. Proestrus bleeding in bitches is due to

a. Sudden estrogen withdrawal
b. Sudden progesterone withdrawal
c. High concentration of progesterone
d. High concentration of estrogen

42. The least preferred time for ovariohysterectomy in bitches is

a. Proestrum b. Estrum
c. Diestrum d. Anestrum

43. Most preferred time for conduct of ovariohysterectomy in bitches is

a. Proestrum b. Estrum
c. Diestrum d. Anestrum

44. Predominant bacteria responsible for pyometra in bitch is

a. E-coli b. Fusobacterium
c. Trueperella d. Mycobacterium

45. In swine, secretion of the endometrial gland reaches the conceptus via

a. Areolae b. Fetal villi
c. Fetal papillae d. Fetal microvilli

46. Which of the following hormone has the structural similarity with growth hormone?

a. Prolactin b. Progesterone
c. Relaxin d. Inhibin

47. PGFis not a hormone of choice for synchronization of estrus cycle in

a. Cow b. Buffalo
c. Goat d. Swine

48. Estrogen exhibits luteotropic action in

a. Cow
b. Swine
c. Goat
d. Buffalo

49. Gestation period of camel is

a. 11 months + 11 days
b. 10 months + 10 days
c. 13 months + 13 days
d. 10 months + 10 days

50. Number of carbon atoms in progesterone hormone is

a. C_{19} b. C_{18}
c. C_{20} d. C_{21}

51. Estrogen derived from mold origin is

a. Isoflavons
b. Zearalenone
c. Diethylstilbesterol (DES)
d. All of the above

52. The longest phase of canine estrous cycle is

a. Estrus b. Metestrus/diestrus
c. Anestrus d. Proestrus

53. PGFis secreted from

a. Endometrial stromal cell
b. Endometrial epithelial cell
c. Ovary
d. All of the above

54. PGE_2 is secreted from

a. Endometrial stromal cell
b. Endometrial epithelial cell
c. Ovaries
d. All of the above

55. ..... is called as prostaglandin synthesis inhibitor

a. Indomethacin
b. Melengesterol acetate
c. Norgestomet
d. Synchromate-B

56. Human menopausal gonadotrophin predominantly has ..... like action

a. LH b. FSH
c. Estrogen d. Progesterone

57. Prolactin act as a luteotrophic factor in

a. Rat b. Mice
c. Bitch d. All of the above

58. The species in which the absence of pregnancy is always associated with a prolonged luteal phase is

a. Sow b. Mare
c. Bitch d. Ewe

59. Absence of corpus haemorrhagicum is observed in

a. Sow b. Mare
c. Bitch d. Ewe

60. Substances which do not conform exactly to the classic definition of hormone are

a. Progesterones b. Prostaglandins
c. Inhibins d. Activins

61. Steroid hormones having receptors in

a. Nucleus b. Cytoplasm
c. Cell membrane d. Both a and b

62. The hormone responsible for separation of pubic symphysis bone normally during parturition in Guinea pig is

a. Relaxin b. Activin
c. Inhibin d. Protein B

63. Organ of gestation is

a. Ovary b. Vagina
c. Uterus d. Oviduct

64. Organ of copulation in female is

a. Vulva b. Vagina
c. Cervix d. Uterus

65. Primary organ of reproduction in female is

a. Oviduct b. Uterus
c. Ovary d. Cervix

66. Primary organ of reproduction in male is

a. Scrotum b. Penis
c. Testis d. Prepuce

67. Transfer of cortisol from mother to fetus is not occur in

a. Sheep b. Goat
c. Cow d. Both a and b

68. **Transfer of fatty acids from mother to fetus is not occur in**

a. Cattle b. Sheep
c. Pig d. Both b and c

69. **Intrauterine Migration of conceptus is noticed in**

a. Bovine b. Swine
c. Caprine d. Ovine

70. **Species in which presence of conceptuses is must in each uterine horn at one point of time in order to prevent the release of luteolytic substance is**

a. Mare b. Sow
c. Bitch d. Camel

71. **Immunoglobulin transferred to the fetus during gestation is**

a. IgA b. IgD
c. IgG d. IgA and IgG

72. **The species in which if the ovary is transplanted outside the pelvic cavity then also luteal regression occurs is**

a. Sow b. Ewe
c. Mare d. Bitch

73. **Oestrus (anovulatory) within to hours postpartum is observed in**

a. Camel b. Mare
c. Swine d. Sheep

74. **Synchronization of oestrus in cows by the administration of two injections of PGFor an analogue is done at an interval of**

a. 11 day b. 14 day
c. 16 day d. 18 day

75. **Zonary type of placenta which incompletely encircle the fetus is observed in**

a. Queen
b. Bitch
c. Elephant
d. Camel

76. **Extra X chromosomes in the male (XXY) result in sterility observed in**

a. Turner's syndrome
b. Supermale syndrome
c. Klinefelter syndrome
d. Frohlich's syndrome

77. **The congenital abnormalities which is characterized by hypoplasia or aplasia of the spinal cord, which ends in the thoracic region is called as**

a. Schistosomus reflexus
b. Camphylorrhexes-scoliosa
c. Perosomus elumbis
d. Amorphous globosus

78. **Most common cause of dystocia in cattle particularly in heifer is**

a. Feto-maternal disproportion
b. Primary uterine inertia
c. Uterine torsion
d. Ring womb

79. **Most common cause of dystocia in bitch is**

a. Primary complete uterine inertia
b. Secondary uterine inertia
c. Feto-maternal disproportion
d. Primary partial uterine inertia

80. **The most common site of C-section in cattle is**

a. Right paralumbar fossa approach
b. Left paralumbar fossa approach
c. Ventro-lateral approach
d. Ventral approach

81. **Incision site particularly indicated for the removal of emphysematous fetus is**

a. Left paralumbar fossa
b. Right paralumbar fossa approach
c. Ventro-lateral approach
d. Ventral approach

82. **The most common site of incision in case of pyometra and C-section in canine is**

a. Ventral midline coeliotomy
b. Flank incision
c. Ventro-lateral
d. All of the above

83. Premature separation of the placenta in case of mare result in protrusion of the allantochorion into the vagina and from the vulva is commonly called as

a. White bag
b. Red bag
c. Grey bag
d. Blue bag

84. Cardinal features of fetal circulation is

a. Umbilical vein rich in oxygenated blood
b. Umbilical artery rich in CO_2 blood
c. Both a and b
d. None of the above

85. In buffaloes uterine involution occurs at

a. 45 days
b. 35 days
c. 20 days
d. 60days

86. In cattle uterine involution occurs at

a. 45 days
b. 35 days
c. 20 days
d. 60days

87. Contagious equine metritis is caused by

a. Taylorella equigenitalis
b. Salmonella abortus equi
c. Equine herpesvirus
d. Leptospira pomona

88. Contagious equine abortion is caused by

a. Klebsiella pneumonia
b. Taylorella equigenitalis
c. Salmonella equi
d. Fusobacterium necrophorum

89. Inter-cotyledonary placenta having Moroccan lather appearance is observed in abortion by

a. Trichomonas
b. Leptospira
c. Brucella
d. Mycobacteria

90. Abortion may occurs at any trimester in

a. BVD
b. Vibriosis
c. Leptospira
d. Trichomoniasis

91. Fetal mummification in bitches is caused by

a. Canine adenovirus
b. Canine parvovirus
c. Canine herpes virus
d. Brucella canis

92. Trichomonad abortion occurs at ..... of gestation

a. 2 months
b. 4 months
c. 6 months
d. 8 months

93. Potato soup colour of pus is observed in

a. Vibriosis
b. Trichomoniasis
c. Leptospira
d. Brucella

94. Microorganism which may cause abortion at any stage of gestation is/are

a. Salmonella species
b. Mycobacterium tuberculosis
c. BVDV
d. All of the above

95. Tritrichomonas fetus infection causes

a. Early abortion
b. Subfertility
c. Pyometra
d. All of the above

96. Granular vulvovaginits is caused by

a. Salmonella equi
b. Bovine herpes virus-1
c. Mycoplasma bovigenitalium
d. Fusobacterium necrophorum

97. Necrotic endometritis is caused by

a. Bovine herpes virus-1
b. Fusobacterium necrophorum
c. Pseudomonas aureoginosa
d. Mycoplasma bovigenitalium

98. Necrotic vaginits is caused by

a. Bovine herpes virus-1
b. Fusobacterium necrophorum
c. Pseudomonas aureoginosa
d. Mycoplasma bovigenitalium

99. Bilateral necrotizing oophoritis is caused by

a. IBR-IPV
b. Bovine herpes virus-1
c. Mycoplasma bovigenitalium
d. Pseudomonas aureoginosa

100. Sigmoid flexor is absent in

a. Ram
b. Buck
c. Bull
d. Stallion

101. **Thin watery and yellowish grey uterine pus with shreds of fetal membranes is observed in**
a. Vibriosis
b. Brucellosis
c. BVD
d. Trichomoniasis

102. **The yolk sac persist for longer period of time (4-6 weeks) during early gestation in**
a. Cow b. Ewe
c. Mare d. Doe

103. **In bovine corpus luteum is refractory to PGFfor ..... after ovulation**
a. 1-2 days b. 3-4 days
c. 5-7 days d. 15-16 days

104. **Corpus luteum in sow would become responsive to PGFduring ..... of regular estrous cycle**
a. Day 6 b. Day 8
c. Day 10 d. Day 12

105. **Species in which administration of GnRH/ hCG is necessary for artificial insemination is**
a. Cattle b. Buffalo
c. Camel d. Swine

106. **RU-denotes**
a. Mifepristone b. Aglepristone
c. Cabergoline d. Metergoline

107. **Raising level of progesterone towards parturition is common in**
a. Mare b. Cat
c. Swine d. Ewe

108. **Presence of meconium in the amniotic fluid, causing staining and smearing of the fetus is due to**
a. Hypothermia
b. Perinatal asphyxia and hypoxia
c. Fetal gigantism
d. Hyperthermia

109. **The abnormal placenta with a reduced number of greatly hypertrophied placentomes is seen in**
a. IBRT b. Hydramnion
c. Hydrallantois d. Brucellosis

110. **Positive signs of pregnancy that is detectable by rectal palpation is/are**
a. Fetal membrane slip
b. Palpation of mmniotic vesicle
c. Palpation of fetus
d. All of the above

111. **In bitches the placenta does not secrete gonadotrophic hormone but it secrete**
a. Progesterone b. Estrogen
c. Prolactin d. Relaxin

112. **Ovulation always occurs at ovulation fossa in**
a. Sow b. Cow
c. Mare d. Bitch

113. **Ovum released when it is in first meiotic division as primary oocyte in**
a. Horse b. Dog
c. Fox d. All of the above

114. **In which species PGFis rerouted into the uterine lumen at the time of maternal recognition of pregnancy**
a. Donkey b. Mare
c. Camel d. Sow

115. **Teratological defects are mainly occur during**
a. Period of Zygote
b. Period of Ovum
c. Period of Embryo
d. Period of Fetus

116. **Which glycoprotein is abundant during the non receptive phase of pregnancy and serves as an anti-adhesion factor is**
a. Muc- I b. Relaxin
c. $PGF_2\alpha$ d. Oestrogen

117. Ferguson's reflex initiates release of ..... hormone during the time of parturition in cow

a. Estrogen
b. Prostaglandin
c. Oxytocin
d. Progesterone

118. Embryo at ..... enter in to the uterus in mare

a. 8-16 cell stage
b. Blastocyst stage
c. 4 cell stage
d. 32 cell stage

119. For induction of parturition in mare ..... is used

a. $PGF_2\alpha$
b. Oestrogen
c. Oxytocin
d. Corticosteroid

120. Dose rate of lignocaine hydrochloride during epidural anaesthesisa in bovine is

a. 1 ml for 200 kg body weight
b. 1 ml for 100 kg body weight
c. 1 ml for 50 kg body weight
d. 1 ml for 25 kg body weight

121. ..... is commonly used for induction of estrus in anestrus bitches

a. PMSG
b. hCG
c. GnRH
d. Bromocriptine

122. In case of freemartinism condition ovaries are

a. Normal
b. Hypoplastic
c. Hyperplastic
d. Aplastic

123. In case of white heifer disease condition ovaries are

a. Normal
b. Hypoplastic
c. Hyperplastic
d. Aplastic

124. A sexually deformed female partner of a heterosexual twin is usually called as

a. Freemartin
b. Hermaphrodite
c. Transgenic
d. Mosaic

125. Segmental aplasia of mullerian duct is observed in

a. Freemartinism
b. White heifer disease
c. Double cervix
d. Intersex

126. Excessive accumulation fluid within the subcutaneous tissue is called

a. Fetal ascites
b. Fetal anasarca
c. Hydrocephalus
d. Hydramnion

127. Excessive accumulation of fluid within the peritoneal cavity of the fetus is called

a. Fetal ascites
b. Fetal anasarca
c. Hydrocephalus
d. Hydramnion

128. Excessive accumulation of fluid within the cranial cavity of fetus is called

a. Fetal ascites
b. Fetal anasarca
c. Hydrocephalus
d. Hydramnion

129. Generally buffaloes has long calving interval than cattle because

a. Have one month longer gestation period
b. Delayed resumption of postpartum estrus
c. Delay in conception due to repeat breeding
d. All of the above

130. In which of the following conditions corpus luteum persists

a. Pyometra
b. Pregnancy
c. Fetal mummification
d. All of the above

131. ..... is also called as cytological endometritis

a. Clinical endometritis
b. Subclinical endometritis
c. Perimetritis
d. Parametritis

132. Causes of anestrum includes

a. Ovarian inactivity
b. Failure to observe the estrum
c. Spontaneous prolongation of CL
d. All of the above

133. Post service/post coital pyometra is characteristic of

a. Campylobacteriosis
b. Vibriosis
c. Trichomoniasis
d. Leptospira

134. Accumulation of connective tissue within the oviduct is called

a. Hydrosalpinx b. Mucosalpinx
c. Pyosalpinx d. Patchysalpinx

135. Some noncyclical bitches will begin cyclical if they are housed with other cyclical bitches this mechanism is called

a. Dormitory effect
b. Bruce effect
c. Whitten effect
d. All of the above

136. Pitman Moore's plate test is used for diagnosis of

a. Brucella canis
b. Leptospira canicola
c. Dipylidium caninum
d. Canine Herpes virus

137. Placentophagy is not observed in

a. Cat b. Mare
c. Cows d. Sow

138. In case of follicular cysts ..... is observed

a. Nymphomania
b. Silent heat
c. Pseudo-pregnancy
d. Anoestrum

139. ..... is a characteristic feature of luteal cyst.

a. Anoestrus
b. Nymphomania
c. Silent heat
d. Pseudo-pregnancy

140. Heifer test is usually performed for the diagnosis of

a. Freemartinism
b. White heifer disease
c. Intersex
d. Campylobacteriosis

141. Gestation period of elephant is

a. 10 months b. 12 months
c. 18 months d. 22 months

142. Uterine torsion is uncommon in mare due to the fact that

a. Sub-ilial mesometrial attachment
b. Long mesometrial attachment
c. Dorsally attached broad ligaments
d. All of the above

143. An advance pregnant cow exhibits abdominal enlargement rapidly within 5 to days in

a. Pyometra b. Hydramnios
c. Hydrometra d. Hydrallantois

144. A pregnant buffalo exhibits chronic, fetid and mucopurulent discharge through the vaginal cavity for a period of several months in

a. Hydrometra
b. Mucometra
c. Fetal maceration
d. Pyometra

145. A pregnant cow with a history of completion of full term gestation but no signs of parturition is observed in

a. Uterine inertia
b. Fetal mummification
c. Fetal macerations
d. Both a and b

146. The young one is born in most advanced state of physiological development in

a. Sow b. Mare
c. Doe d. Buffalo

147. Recommended fetotomy operation in case of breech presentation is

a. Bisection of pelvis
b. Amputation of limbs
c. Decapitation
d. Amputation of chest

148. In oblique ventro-vertical presentation, how many limbs are found in the birth canal?

a. 2 fore limbs
b. 2 hind limbs
c. 2 fore limbs + 1 hind limbs
d. 2 fore limbs + 2 hind limbs

149. **Incidence of dystocia due to ring womb condition is more common in**
a. Cow
b. Buffalo
c. Ewe
d. Mare

150. **Bilateral hip flexion is characterized by**
a. Dog sitting posture
b. Poll presentation
c. Foot nape posture
d. Breech presentation

151. **Castration cells are located at**
a. Testis
b. Prostate
c. Pituitary
d. Hypothalamus

152. **Rig test is used to detect the suspected cases of**
a. Testicular hypoplasia
b. Testicular torsion
c. Cryptorchid testis
d. Testicular degeneration

153. **..... never lick their fetus after parturition**
a. Mare
b. Dog
c. Goat
d. Swine

154. **Normal volume of allantoic fluid in ewe is**
a. 500 to 1500 ml
b. 3000 to 7000 ml
c. 350 to 700 ml
d. 40-200 ml

155. **Normal volume of amniotic fluid in mare is**
a. 5000 to 6000 ml
b. 500 to 1500 ml
c. 100 to 200
d. 10 to 15 ml

156. **Swiss cheese appearance of endometrium is observed in**
a. Luteal cyst
b. Follicular cyst
c. Paraovarian cyst
d. Cystic corpora lutea

157. **Condition of adrenal virilism is associated with**
a. Paraovarian cyst
b. Luteal cyst
c. Follicular cyst
d. Cystic corpora lutea

158. **Temperature of liquid nitrogen vapor is**
a. -79°C
b. -196°C
c. -120°C
d. -265°C

159. **Poly cotyledonary type of placenta is present in**
a. Mare
b. Ruminants
c. Giraffe
d. Deer

160. **Mummification in swine is more common in**
a. Aujezsky's disease
b. Pseudorabies
c. SMEDI
d. Hog cholera

161. **Most common cause of dystocia in buffaloes is**
a. ICD
b. Uterine torsion
c. Uterine inertia
d. Abnormal position and posture

162. **Most common cause of dystocia in bitch and sow is**
a. Uterine torsion
b. ICD
c. Uterine inertia
d. Abnormal position and posture

163. **Male fetuses are larger and heavier than female fetuses in all the farm animals except**
a. Queen
b. Cow
c. Mare
d. Bitch

164. **Prognosis of dystocia is graver than other domestic animals in**
a. Buffalo
b. Ewe
c. Cow
d. Mare

165. **Cocking of the tail, on to days after fertile mating is known to be reliable for pregnancy diagnosis in**

a. Mare b. Donkey
c. Camel d. Giraffe

166. **Bilateral Hip flexion in posterior presentation is called**

a. Breech presentation
b. Dog sitting posture
c. Breast head posture
d. Vertex posture

167. **Bilateral Hip flexion in anterior presentation is called**

a. Dog sitting posture
b. Breast head posture
c. Breech presentation
d. Vertex posture

168. **Number of cuts should not go more than ..... in complete fetotomy**

a. 2 b. 4
c. 6 d. 8

169. **In bovine while doing epidural anaesthesia the needle is inserted at an angle of**

a. 30° b. 45°
c. 90° d. 10°

170. **Epidural anaesthesia does not affect**

a. Myometrial contractions
b. Separation of placenta
c. Uterine involution
d. All of the above

171. **Epidural anaesthesia helps in**

a. Analgesia
b. Prevention of straining
c. Obstetrical operation can be perform in standing animals
d. All of the above

172. **Most commonly used AV model for semen collection in bulls is**

a. Danish model
b. Mississippi model
c. Norweigian model
d. Harrop model

173. **In ..... pregnancy is always observed in left uterine horn**

a. Mare b. Cow
c. Donkey d. Camel

174. **Penile part is S shaped in**

a. Bull b. Boar
c. Stallion d. Camel

175. **Shape of the head of spermatozoa in camel is**

a. Rectangular b. Oval
c. Hook d. Elliptical

176. **Shape of the head of spermatozoa in buffalo bull is**

a. Rectangular b. Oval
c. Cook d. Elliptical

177. **Corona glandis is present in**

a. Stallion
b. Ox
c. Dog
d. Boar

178. **A male dog shows the symptoms of bilateral alopecia, feminization and testicular atrophy due to**

a. Leydig cell tumor
b. Sertoli cell tumor
c. Prostate tumor
d. Seminoma

179. **Vermiform appendages are present in the penile part of**

a. Cat
b. Dog
c. Ram
d. Stallion

180. **In boar, secretion of bulbourethral gland is sticky, gelatinous and tapioca like consistency due to the presence of**

a. Sialomucin
b. Glycerylphosphorylcholine
c. Sorbitol
d. Glucose

181. Dribbling of fluid from prepuce before copulation in bull is mainly secreted from

a. Seminal vesicle
b. Prostate
c. Ampulla
d. Bulbourethral gland

182. Gel portion of stallion semen ejaculate is contributed by

a. Bulbourethral gland
b. Seminal vesicle
c. Prostate
d. Ampulla

183. Egg yolk coagulating enzyme (EYG) is found in the seminal plasma of

a. Buffalo bull
b. Buck
c. Ram
d. Stallion

184. Mammalian spermatozoa had approximately how many copies/numbers of mitochondrial DNA

a. 20 to 30
b. 40 to 50
c. 70 to 80
d. 150 to 200

185. Dry weight of bull spermatozoa is

a. 16.5×10^{-12}gm
b. 7.2×10^{-12}gm
c. 21.2×10^{-12}gm
d. 26.2×10^{-12}gm

186. Osmotic pressure of buffalo semen is

a. 285 milliosmole
b. 256 milliosmole
c. 300 milliosmole
d. 310 milliosmole

187. Osmotic pressure of bull semen is

a. 285 milliosmole
b. 256 milliosmole
c. 300 milliosmole
d. 310 milliosmole

188. Osmolarity of HOST solution used in hypo-osmotic swelling test is

a. 150 milliosmoles
b. 285 milliosmoles
c. 320 milliosmoles
d. 400 milliosmoles

189. pH of buffalo semen is

a. 6.8
b. 6.6
c. 7.2
d. 7.8

190. Normal sperm concentration (million/ml) of buffalo semen is

a. 600-1200
b. 800-2000
c. 2000-3000
d. 200-300

191. Normal sperm concentration (million/ml) of bull semen is

a. 600-1200
b. 800-2000
c. 2000-3000
d. 200-300

192. Life span of dog spermatozoa in female genital tract is

a. 1-2 days
b. 3-4 days
c. 9-10 days
d. 5-7 days

193. Per gram of testicular tissue produces maximum number of spermatozoa in

a. Bull
b. Doe
c. Boar
d. Stallion

194. The characteristic odour of semen is due to presence of

a. Citric acid
b. Fructose
c. Ergothionine
d. Spermin

195. Which among the following is a low molecular weight cryoprotectant?

a. Glycerol
b. DMSO
c. Propylene glycol
d. Ethylene glycol

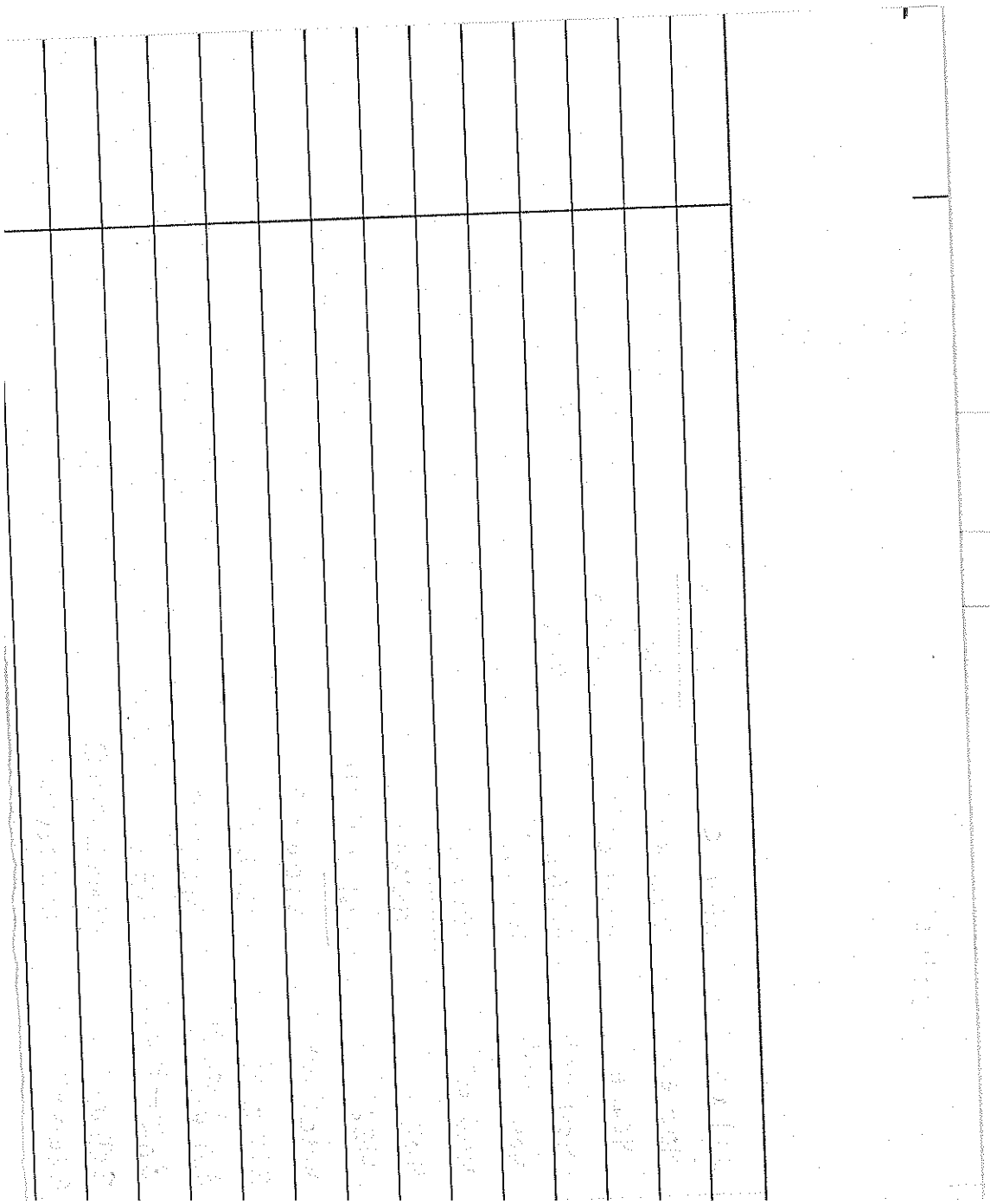
196. Which among the following is a non permeable cryoprotectant?

a. Sucrose
b. Ethylene glycol
c. Glycerol
d. Propylene glycol

197. AI technique used in case of mare is

a. Recto-vaginal method
b. Speculum method
c. Man-O-Cervical method
d. Both a and c

399 a ✓	387 c ✓	325 a ✓
400 d ✓	388 c ✓	328
402 b ✓	394 c ✓	338 a
404 → b	396 c ✓	336
405 → b	395 b ✓	
406 a ✓	392 c ✓	
407	353 d ✓	
413 d ✓	351 c P → b	
414 c P → a	310 d ✓	
380 c ✓	311 b ✓	
381 d P → b	312 → a	
382 → d	317 d ✓	
385 d ✓	322 b P → C	
386 a ✓	321 a ✓	



198. Species which have two separate uterine horns with two separate cervix is

a. Cat b. Dog
c. Rat d. Rabbit

199. Indication of puberty in bulls is

a. Age at the first ejaculate contains $50x10^6$ sperms
b. The first ejaculated sperms which have 10% progressive motility
c. Both a and b
d. None of the above

200. The most effective treatment for benign prostatic hyperplasia in dog is

a. Estrogen b. GnRH
c. Testosterone d. Castration

201. ..... is a protozoal infection which causes a mild catarrhal endometritis and vaginitis in cows

a. Trichomoniasis b. Trypanasomiosis
c. Leishmaniosis d. Anaplasmosis

202. To diagnose subclinical endometritis at 40-days of postpartum, the threshold level of polymorphonuclear (PMN) cells in the endometrial cytology study should be .....

a. > 5% b. > 20%
c. > 10% d. > 30%

203. Radish (Raphanus sativus) contain ..... Which has anti-bacterial and antifungal activity

a. Curcumin b. Selenium
c. Raphanin d. Genistein

204. Criteria for successful control breeding

a. Postpartum period should be >45 to 60 days
b. Animals must be in positive energy balance
c. Animal must be non-pregnant
d. All of the above

205. The corpus luteum will not be responsive to natural prostaglandin for up to ..... days of estrus cycle

a. First 2 days b. First 4 days
c. First 6 days d. First 24 hours

206. Example for synthetic $PFG_{2\alpha}$

a. Dinoprost
b. Cloprostenol
c. Tiaprost
d. Carbetocin

207. Controlled internal drug release (CIDR) contains ..... hormone

a. Natural progesterone
b. Synthetic progesterone
c. Semi synthetic progesterone
d. Progesterone analogue

208. Which of the following hormones used in Ovsynch protocol

a. GnRH + PG
b. Progesterone + LH
c. PG + Estrogen
d. FSH + LH

209. Which is the most important Managemental requirement for estrus synchronization

a. AI with fresh semen
b. AI with liquid semen
c. Estrus detection
d. Proper timing of intervention

210. Principle used in estrus synchronization

a. Manipulation of follicular wave
b. Extending the lifespan of CL
c. Shortening the lifespan of CL
d. All of the above

211. Dose rate of synthetic prostaglandins

a. 2.5 mg b. 25 mg
c. 0.5 mg d. 5 mg

212. Dose rate of buserelin acetate used for synchronization of ovulation is

a. 100 mg b. 10 mg
c. 100 µg d. 10 µg

213. TRIU – B contains ..... Hormone

a. Buserelin acetate
b. Fertireline acetate
c. Progesterone
d. Cloprostenol sodium

214. An ideal dairy cow should have calving interval at the range of

a. 30-36 months
b. 25 to 30 months
c. 19-24 months
d. 12-18 months

215. The duration of estrus in cow is

a. 36 to 48 hrs
b. 25 to 36 hrs
c. 18-24 hrs
d. 0-6 hrs

216. Which of the following is not a normal stage of estrous cycle in cows

a. Anestrus
b. Diestrus
c. Metestrus
d. Estrus

217. Which of the following hormone is predominant during estrus

a. Estradiol
b. Progesterone
c. LH
d. Prostaglandin

218. Progesterone can be administered in the form except ..... route

a. Implant
b. Oral
c. Injection
d. Ocular

219. In ovsynch protocol, PG has to be administered ..... day of the protocol

a. 7
b. 9
c. 4
d. 0

220. In co-synch protocol, AI is combined with ..... hormone

a. Progesterone
b. Estrogen
c. GnRH
d. Prostaglandin

221. Melengesterol acetate (MGA) is an example for .....

a. Oral prostaglandin
b. Oral progesterone
c. Oral GnRH
d. Oral LH

222. Which of the following is not a progesterone preparation

a. Chorulon
b. Syncromate B
c. CIDR
d. TRIU-B

223. Repeat breeding cow is the one that has been bred minimum of ..... Times with good quality semen or bred by a fertile bull yet failed to conceive

a. 1
b. 3
c. 7
d. 10

224. Repeat breeding cow is .....

a. Free from palpable genital abnormalities
b. 32 days estrus interval
c. Not yet calved once
d. Palpable abnormalities

225. The major causes of repeat breeders are

a. Fertilization failure
b. Early embryonic death
c. Both a and b
d. None of the above

226. Delayed ovulation is characterized by

a. Short estrous cycle
b. Long estrous cycle
c. Normal estrous cycle
d. Prolonged estrus

227. Chromosomal aberrations in the fertilized ovum cause

a. Fertilization failure
b. Early embryonic death
c. Both a and b
d. None of the above

228. White side test is used to detect

a. Clinical endometritis
b. Metritis
c. Subclinical endometritis
d. Puerperal metritis

229. Double AI at an interval of ..... Hours is recommended to tackle delayed ovulation

a. 24
b. 96
c. 48
d. 72

230. ..... is the most striking feature of acute endometritis in uterine histopathology

a. Cellular infiltration
b. Degenerative epithelium
c. Hyaline changes
d. Periglandular fibrosis

231. Progesterone can be given day 7th post AI at the dose rate of ..... to avoid early embryonic death

a. 5 mg b. 500 mg
c. 500 µg d. 500 ng

232. Ultrasonography is used to detect ovulatory failures such as

a. Delayed ovulation b. Anovulation
c. Inovulation d. Ovulation

233. Normal estrous cycle length in pluriparous cows is

a. 15-17 days b. 26-28 days
c. 18 -21 days d. 22- 25 days

234. Time of ovulation in cow is

a. 10 to 12 hrs after the onset of estrus
b. 10 to 12 hrs after before the end of estrus
c. 10 to 12 hrs before the onset of estrus
d. 10 to 12 hrs after the end of estrus

235. Presence of anti-sperm antibodies in cow causes

a. Agglutination / immobilization of sperm
b. Favours fertilization
c. Favours capacitation
d. Increase sperm motility

236. PSP dye test is used to identify

a. Uterine block
b. Oviductal block
c. Cervical block
d. Vaginal block

237. Endometrial cytology is used to identify

a. Clinical endometritis
b. Subclinical endometritis
c. Metritis
d. Sclerotic metritis

238. The first line of approach for treating the repeat breeding cow is

a. Sexual rest
b. Embryo transfer
c. IVF
d. Super ovulation

239. Which of the following hormone is recommended at the time of AI to improve the conception rate in repeat breeding cows?

a. Buserelin acetate
b. Progesterone
c. PMSG
d. Estrogen

240. Which of the following drug is used to avoid oxidative stress in repeat breeding cows

a. Vit E + Se
b. Vit E + Mg
c. Vit A + calcium
d. All of the above

241. Which one of the drug is found to be effective for subclinical infection in repeat breeder cows

a. Tincture benzoin
b. Tincture iodine
c. Lugol's iodine
d. All of the above

242. Prevalence of repeat breeding is more in ..... Cows

a. Purebred b. Crossbred
c. Indigenous d. Exotic

243. Scent glands, source of pheromones located dorsally and medially at the horns of

a. Ram b. Bull
c. Buck d. Stallion

244. Sertoli cell produces the protein hormone which suppresses the production of FSH

a. Androgen binding protein
b. Luteinizing hormone
c. Mullerian Inhibiting substance
d. Estrogen

245. Spreading of adherent acrosomal granule over the surface of spermatid nucleus

a. Golgi phase
b. Acrosomal phase
c. Cap phase
d. Maturation phase

246. Infertility in a bull due to Inability to fertilize

a. Penile deviation
b. Testicular Hypoplasia
c. Penile franulum
d. Penile Neoplasm

247. The penile protrusion is followed by

a. Erection
b. Intromission
c. Mounting
d. Pelvic thrust

248. The required number of progressive motile sperms at A.I. in cattle is

a. 50 millions
b. 10 millions
c. 30 millions
d. 3 millions

249. Presence of musculo membranous attachment on ventral aspect of glans penis to the preputial mucosa

a. Balanoposthitis
b. Penile tumor
c. corkscrew penis
d. Penile frenulum

250. Eccentrically placed thickening of the acrosome is known as

a. Diadem defect
b. Sterilizing tail stump
c. Acrosomal cap
d. Knobbed spermatozoa

251. Flehman's reaction is not observed in

a. Bull
b. Stallion
c. Boar
d. Ram

252. Bicornual transverse presentation is more common in

a. Cows
b. Mare
c. Buffalo
d. Ewes

253. Both hind limbs retained in the uterus beneath the body of the posteriorly presented fetus

a. Dog sitting posture
b. Poll presentation
c. Breech presentation
d. Wry neck

254. Acute angulation of the vertebral column of the fetus causing dorsal approximation of its head and tail is a

a. Perosomus elumbis
b. Otter calf
c. Amorphus globosus
d. Schistosomus reflexus

255. The release of which hormone is associated with the Fergusion's reflex.

a. Estroegn
b. Oxytocin
c. Progesterone
d. Relaxin

256. Penile Transmissible tumor is observed in the

a. Ram
b. Dog
c. Stallion
d. Bull

257. Androgen Binding protein is secreted by

a. Ley dig cells
b. Spermatogonia
c. Sertoli cells
d. Efferent ducts

258. Eversion of galea capitis and crater shaped depressions in the nucleus

a. Dag defect
b. Diadem defect
c. Corck screw defect
d. Abaxial defect

259. Effecting a change in the presentation is known as

a. Rotation
b. Version
c. Extension
d. Flexion

260. Non dilation of cervix causing dystocia in ewes is known as

a. Vertex
b. Foot nape
c. Ring womb
d. wry neck

261. Pattern assumed by the semen upon drying on a glass slide

a. Fern pattern
b. Crenellation pattern
c. Cork screw pattern
d. Zig Zag pattern

262. Test used to know the functional integrity of sperm membrane

a. Sperm mucus penetration test
b. Hypo osmotic swelling test
c. Hamster egg penetration test
d. High temperature viability test

263. The end of the diestrus period is due to

a. Recruitment of the ovulatory follicular wave.
b. A decrease in estradiol negative feedback.
c. Regression of the corpus luteum.
d. An increase in estradiol levels coming from the preovulatory follicle.

264. In the mare, transition from the non-breeding to the breeding season is caused by

a. A decrease in melatonin.
b. A decrease in the day length.
c. A switch from positive to negative feedback by estradiol.
d. The presence of progesterone coming from the corpus luteum.

265. Granulosa cells are similar to Sertoli Cells in that both

a. Have FSH receptors
b. Have LH receptors
c. Produce testosterone
d. Have very low levels of cAMP

266. The blood testis barrier is due to

a. The inhibition to growth of blood vessels in the seminiferous tubules.
b. The presence of gap junctions between Sertoli cells.
c. The presence of tight junctions between Sertoli cells.
d. The basement membrane between the Sertoli cells and the interstitial space where the Leydig cells are located.

267. It has been demonstrated that dogs can be trained to detect estrus in cattle. Which of the following senses is being used by the dog to accomplish this task?

a. Smell b. Touch
c. Sight d. Hearing

268. pH of embryo collection medium ranges from

a. 4.0 - 5.0 b. 7.2 - 7.6
c. 8.0 - 10.0 d. 6.0 - 6.8

269. The survival of embryo in heat treated serum is for

a. 12 hrs b. 24 hrs
c. 48 hrs d. 72 hrs

270. During cryopreservation process which part of the spermatozoa get primarily damaged

a. Plasma membrane b. Cytoplasm
c. Nucleus d. Acrosome

271. During cryopreservation spermatozoa encounters

a. Cold shock b. Osmotic stress
c. Oxidative stress d. All of the above

272. Physiological role of reactive oxygen species (ROS) includes

a. Capacitation
b. Acrosome reaction
c. Sperm-oocyte fusion
d. All of the above

273. Primary structure which is attacked by reactive oxygen species (ROS) is

a. Sperm plasma membrane
b. Cytoplasm
c. Nucleus
d. Acrosome

274. Buffalo spermatozoa is more susceptible to lipid peroxidation during cryopreservation because of

a. High concentration of PUFA
b. Low concentration of PUFA
c. High concentration of NEFA
d. High concentration of BHBA

275. Flehmen's reaction is absent in

a. Stallion b. Bull
c. Buck d. Boar

276. Chronic prolapse of the prepuce most commonly seen in

a. Sahiwal
b. Red sindhi
c. Brahman
d. All of the above

277. Torsion of the testicle is more commonly reported in

a. Stallion
b. Boar
c. Bull
d. Dog

278. Large purulent or curd like consistency of semen is observed in

a. Prostatitis
b. Seminal vesiculitis
c. Epididymitis
d. Balanitis

279. Sperm defect in which coiling of principal piece over the middle piece is observed

a. Diadem defect
b. Dag defect
c. Cork screw defect
d. Knobbed defect

280. Sperm defect which occurs due to irregular distribution of the mitochondrial sheath is

a. Diadem defect
b. Dag defect
c. Cork screw defect
d. Knobbed defect

281..... are least susceptible to heat stress

a. Spermatogonia
b. Spermatocytes
c. Spermatids
d. Spermatozoa

282. Semen of ..... contain 7 times more level of copper and times more level of zinc compared to blood

a. Dog
b. Bull
c. Stallion
d. Boar

283. Fluorescent probe used to see the mitochondrial function is

a. Rhodamine - 123
b. JC- 1
c. Mitotrackers
d. All of the above

284. Fluorescent test used for assessment of capacitation like changes is

a. JC- 1
b. Annaxin – V
c. Hoechst 33258
d. Chlorotetracycline assay (CTC)

285. DNA integrity of the spermatozoa can be estimated through

a. TUNEL assay
b. COMET assay
c. SCS assay
d. All of the above

286. The total length of buffalo spermatozoa in (μ) is

a. 13
b. 20
c. 40
d. 75.4

287. Incidence of gestational estrus is reported more in

a. Crossbred cattle
b. Sheep
c. Horse
d. Swine

288. Almost 92-of heifers that are born as co-twin to bulls are

a. Fertile
b. Infertile
c. Sub-fertile
d. Sterile

289. Type of placenta in elephant is

a. Diffuse
b. Discoid
c. Cotyledonary
d. Zonary

290. Transuterine migration of conceptus is noticed in

a. Bovine
b. Equine
c. Caprine
d. Ovine

291. Transplacental transport of immunoglobulin occur in

a. Human
b. Guinea pig
c. Rabbit
d. All of the above

292. Through per-rectal examination placentomes can be palpable as early as

a. 30 to 50 days of gestation
b. 50 to 60 days of gestation
c. 80 to 90 days of gestation
d. 120 to 150 days of gestation

293.Spermatozoa of ..... is most susceptible to cold shock

a. Bull b. Buck
c. Stallion d. Boar

294.Number of carbon atom present in testosterone is

a. 19 b. 18
c. 20 d. 21

295.Unlike other domestic species, there are no follicular waves in

a. Mare b. Doe
c. Ewe d. Sow

296.Proestrus bleeding in bitches is due to

a. High concentration of Estrogen
b. Sudden withdrawal of Estrogen
c. Sudden withdrawal of Progesterone
d. Sudden withdrawal of prostaglandin

297.Largest corpus haemorrhagicum is present in

a. Swine
b. Buffalo
c. Cow
d. Mare

298.Maximum immotile spermatozoa are removed at

a. Cervix b. Uterus
c. Vagina d. Oviduct

299.PSP can be performed during

a. Metestrus
b. Follicular phase
c. Follicular and luteal phase
d. Luteal phase

300.Female ovulating two or more ova during one estrus and copulating with two or more male during the estrus resulting into fertilization of ova by spermatozoa from each male is called

a. Superfetation b. Superfecundation
c. Balling up d. Telegony

301.The average sperm cell contents in boar semen is about

a. 10% of its semen volume
b. 40% of its semen volume
c. 20% of its semen volume
d. 2-5% of its semen

302.Number of motile spermatozoa required for A.I. with liquid semen in sheep is about

a. 10 millions
b. 20 millions
c. 40 millions
d. 50 millions

303.Incubation temperature of water bath in MBRT test is

a. 37°C b. 38°C
c. 42°C d. 46.5°C

304.Only one accessory sex gland is present in

a. Dog b. Ram
c. Buck d. Bull

305.Average length of bull's spermatozoa is

a. 50μ b. 60 to 70 μ
c. 100 μ d. 120 μ

306.Average length of stallion's spermatozoa is

a. 50 μ b. 60 to 70 μ
c. 100 μ d. 120 μ

307.In poultry, daily sperm production is about ..... per gram of testicular weight

a. 25 million b. 50 million
c. 100 million d. 150 million

308.Scrotum is located caudal to the thighs in perineal region and ventral to the ischiatic arch in

a. Camel b. Boar
c. Cat d. All of the above

309.Mediastinum testes is absent in

a. Stallion b. Bull
c. Boar d. Buck

310. Testicles are placed nearly horizontally in the scrotum of

a. Bull
b. Ram
c. Buck
d. Stallion

311. Blood testes barrier in farm animals is mainly formed by

a. Leydig cell
b. Sertoli cells
c. Seminiferous tubules
d. Mediastinum tetes

312. Length of epididymis in bull is

a. 30m or 100 feet
b. 50 m or 155 feet
c. 20 m or 65 feet
d. All of the above

313. Prostate secretion has high concentration of zinc in

a. Dog
b. Bull
c. Stallion
d. Ram

314. Uterus without intercornual ligament is present in

a. Bitch
b. Goat
c. Sow
d. Cattle

315. Hormone responsible for spermatogenic process is

a. LH
b. FSH
c. T_4
d. All the above

316. Half life of testosterone (Tis

a. 3 minutes
b. 30 minutes
c. 2.5 hrs
d. 5 to 7 days

317. During eosin-nigrosin staining, live sperm appears as

a. Blue
b. Pink
c. Black
d. Colourless

318. Colour of horse, boar and dog semen is

a. Yellowish
b. Milky white
c. Creamy white
d. Pearly white to grey

319. pH of boar and stallion semen is

a. 6.2
b. 6.8
c. 7.4
d. 7.8

320. Length of buffalo bull AV is

a. cm
b. 25 to 30 cm
c. 35 cm
d. 40 cm

321. Breeder bag method of semen collection is used in

a. Stallion
b. Boar
c. Ram
d. Dog

322. Best method of semen collection in dogs is

a. Electroejaculation
b. AV method
c. Digital manipulation
d. All of the above

323. Which of the following defect of spermatozoa are compensable defects?

a. Knobbed spermatozoa
b. Distal mid piece defect
c. Dag defect
d. All of the above

324. Which of the following defect of spermatozoa are un-compensable defects?

a. Chromatin defects
b. Macrocephalic and Pyriform head
c. Proximal protoplasmic droplet
d. All of the above

325. Test carried out to assess the metabolic activity of spermatozoa is

a. MBRT
b. HOST
c. CMPT
d. ZFHPT

326. Surface area of French mini straw is

a. 1133 mm^3
b. 1152 mm^3
c. 823 mm^3
d. 133 mm^3

327. Surface area of French midi straw is

a. 1133 mm^3 / 11.33 cm
b. 1152 mm^3 / 11.5 cm
c. 823 mm^3 / 8.2 cm
d. 133 mm^3 / 1.33 cm

328. Prostate gland doesn't have body in

a. Bull b. Stallion
c. Ram d. Dog

329. Disseminate prostate is absent in

a. Bull b. Stallion
c. Ram d. Dog

330. Glans penis has cartilaginous process in

a. Dog b. Tom cat
c. Boar d. Alpaca

331. Volume of bull spermatozoa is about

a. 20μm^3 b. 40 μm^3
c. 80 μm^3 d. 120 μm^3

332. Appendix testis is commonly present in

a. Bovine b. Equine
c. Porcine d. Canine

333. Spermatogenesis process is completed in ..... in cattle

a. 38 days b. 50 days
c. 61 days d. 120 days

334. Spermatogenesis process is completed in ..... in buffalo bull

a. 38 days b. 50 days
c. 61 days d. 120 days

335. Duration of one cycle of seminiferous epithelium in buffalo is about

a. 13.5 days b. 8.6 days
c. 10 days d. 12 days

336. Longest mating time is observed in

a. Boar b. Bull
c. Stallion d. Dog

337. 'Copulatory cry' is observed during mating of

a. Dog
b. Rabbit
c. Cat
d. Stallion

338. 'Copulatory tie' is observed during mating of

a. Dog b. Rabbit
c. Cat d. Stallion

339. Enzymes involved in conversion of testosterone to estrogen is

a. 17-α hydroxylase
b. Aromatase
c. 9-ketoreductase
d. 5-α reductase

340. Enzymes involved in conversion of testosterone to androstenedione is

a. 17-α hydroxylase
b. Aromatase
c. 5-α reductase
d. 3β HSD

341. Immunoglobulin present in abundance in seminal plasma is

a. IgG b. IgA
c. IgY d. IgM

342. A band of tissue extending from prepuce to the ventral tip of the penis is

a. Phimosis b. Posthitis
c. Paraphimosis d. Persistent frenulum

343. Which one is a more potent or active form of androgen in stallion

a. Androstenedione
b. Dihydrotestosterone
c. Testosterone
d. All of the above

344. Testosterone is converted to dihydrotestosterone by

a. 17-α hydroxylase
b. Aromatase
c. 9-ketoreductase
d. 5-α reductase

345. Extenders for semen preservation at room temperature

a. Cornell University Extender (CUE)
b. Coconut milk extender (CME)
c. Illini variable temp (IVT)
d. All of the above

346. Fertile life of sperm and ovum in the horse is

a. 24-72 hrs and 8-10 hrs
b. 6-8 hrs and 72-120 hrs
c. 72-120 hrs and 6-8 hrs
d. All of the above

347. Sigmoid flexure in camel is

a. Post-scrotal
b. Pre-scrotal
c. Absent
d. None of the above

348. ..... are quite resistant to irradiation

a. Leydig cells
b. Sertoli cells
c. Spermatocyte
d. Both a and b

349. ..... cells are more sensitive to irradiation

a. Leydig cells
b. Sertoli cells
c. Spermatocytes
d. None of the above

350. Reaction time of a bull with an excellent libido should be

a. < 3 seconds
b. < 10 seconds
c. < 3 minutes
d. < 10 minutes

351. Scrotal hernia is most commonly observed in

a. Bull
b. Boar
c. Stallion
d. Ram

352. Large offspring syndrome is reported in

a. Cloning
b. Transgenesis
c. IVEP
d. All of the above

353. Hormone responsible for sperm transport in the female reproductive tract after mating is

a. Progesterone
b. Relaxin
c. Estrogen
d. Oxytocin

354. ..... is a condition in ram which is also called as pizzle rot or sheath rot

a. Phimosis
b. Balanitis
c. Paraphimosis
d. Balanoposthitis

355. Gestation period is equal to length of estrous cycle in

a. Kangaroo
b. Rhinoceros
c. Elephant
d. Giraffe

356. Cryptorchidism is commonly observed in

a. Boar
b. Stallion
c. Dog
d. All of the above

357. Testicular decent occurs in dog at

a. 2 to 2.5 months of gestation
b. 3 months of gestation
c. 3.5 to 4 months of gestation
d. 5 days after birth

358. Length of seminiferous tubules in boar is

a. 6000 meters
b. 5000 meters
c. 4000 meters
d. 150 meters

359. Cytologically oestrus in bitches is defined as

a. >80% Parabasal cells or >80% Intermediate cells
b. >80% Intermediate cells or > 80% Parabasal cells
c. >80% Superficial cells or > 80% Intermediate cells
d. >80% Superficial cells or > 80% Anuclear cells

360. Penile bone is present in

a. Foxes
b. Hedgehogs
c. Mink
d. All of the above

361. Bovine embryo assumes 'L' shape at

a. 70-80 days of gestation
b. 12-18 days of gestation
c. 35-40 days of gestation
d. 100-120 days of gestation

362. Appearance of good quality embryo is

a. Opaque
b. Transparent
c. Translucent
d. None of the above

363. Temperature at which, micromanipulation of embryo is performed

a. -196 °C
b. 37 °C
c. 0 °C
d. -5 °C

364. Seeding of embryo is performed at

a. 10 °C
b. 15 °C
c. 0 °C
d. -6 °C to -7 °C

365. Embryonic stage with signet ring appearance is

a. Morula
b. Early blastocysts
c. Hatched blastocyst
d. Gastrula

366. Bovine embryo must be evaluated at

a. 20-40X
b. 50-100X
c. 10-20X
d. None of the above

367. In cow the embryo collection is done on

a. 3rd day
b. 5th day
c. 7th day
d. 10th day

368. When a pregnant female carrying one or more live fetus, exhibits estrus followed by mating leading to second conception which occurs in the uterus already containing at least one live fetus is called

a. Superfoetation
b. Superfecundation
c. Telegony
d. Balling up

369. Which one of the following drug is commonly used during pseudopregnancy in bitch?

a. Tamoxifen
b. Flutamide
c. Cabergoline
d. Megestrol acetate

370. The Shape of uterine caruncles in cow and goat are

a. Concave
b. Convex
c. convex and concave
d. concave and convex

371. Breed of bitch having highest risk of pyometra is

a. German Shepherd
b. Daschunds
c. Boxer
d. Rottweiler

372. Estrus in bitches characterized by

a. Increase progesterone & decrease estrogen
b. Increase Prolactin & decrease progesterone
c. Increased Relaxin & Increased estrogen
d. Increased estrogen & decreased Relaxin

373. Characteristics split immune tolerance a to trophoblast during pregnancy observed in

a. Cow
b. Sow
c. Bitch
d. Mare

374. Glucose transport across the placenta is mediated by

a. Simple diffusion
b. Facilitated diffusion
c. Active transport
d. All of the above

375. Species in which if the ovary is transplanted outside the pelvic cavity then also luteal regression occurs is

a. Sow
b. Ewe
c. Mare
d. Bitch

376. The species in which in absence of pregnancy a prolonged luteal phase is always observed is

a. Sow
b. Mare
c. Bitch
d. Ewe

377. Which of the following is called transient endocrine organ

a. Placenta
b. Corpus Luteum
c. Endometrial cups
d. All of the above

378. Lipid peroxidation process is assessed by

a. TUNEL assay
b. Merocyanine
c. C_{11} BODIBY 581/591
d. COMET assay

379. Sperm apoptotic like changes can be assessed by using

a. JC-1
b. Annaxin- V
c. Acridine Orange (AOT)
d. Merocyanine- 540

380. Which of the following copulation occurs in sitting position?

a. Mare
b. Sow
c. Camel
d. Buffalo

381. Slow freezing of semen causes

a. Dilution effect
b. Solution effect
c. Osmotic effect
d. Ice crystal formation

382. Effect of Reactive Oxygen Species (ROS) in spermatozoa is

a. Impair sperm motility
b. Sperm mitochondrial change
c. Sperm nuclear changes
d. All of the above

383. Species in which ovarian histology is characterized by inner cortex with outer medulla

a. Mare
b. Queen
c. Bitch
d. Camel

384. Which one of the organ had highest blood supply per unit of tissue?

a. Vagina
b. Corpus luteum
c. Vulva
d. Cervix

385. Corkscrew cervix is characteristic of ..... species

a. Ewe
b. Mare
c. Rabbit
d. Sow

386. Hormone responsible for growth of alveoli in mammary gland is

a. Progesterone
b. Estrogen
c. Prostaglandins
d. Prolactin

387. Predominant immunoglobulin found in follicular fluid is

a. Ig D
b. Ig M
c. Ig G
d. Ig E

388. Large amount of progesterone secretion is observed at

a. Proestrus
b. Estrus
c. Diestrus
d. Metestrus

389. Hormone responsible for contraction of shell gland and oviposition in birds is

a. Prolactin
b. Vasotocin
c. GnRH
d. Relaxin

390. Preovulatory luteinization of the follicles is more common in

a. Queen
b. Bitch
c. Mare
d. Camel

391. Incidence of polyoocytic follicles are common in

a. Bitch
b. Mare
c. Ewe
d. Camel

392. Capacitation of spermatozoa occurs at

a. Fimbrae
b. Infundibulum
c. Isthmus
d. Ampullae

393. Weaver finch feather test is done for

a. Prolactin
b. Estrogen
c. Progesterone
d. LH

394. Hormone responsible for Ferguson's reflex is

a. Estrogen
b. Relaxin
c. Oxytocin
d. $PGF_2\alpha$

395. Hormone having growth hormone like structure as well as biological properties is

a. Estrogen
b. Prolactin
c. Relaxin
d. Progesterone

396. Ovulation occurs in cow during ..... phase of estrus cycle

a. Proestrus
b. Estrus
c. Metestrus
d. Diestrus

397. Sudden release of luteinizing hormone (LH surge) is not observed in

a. Buffalo b. Mare
c. Bitch d. Cow

398. Species in which unfertilized ovum remain in oviduct for several months is

a. Queen b. Swine
c. Bitch d. Mare

399. In swine, MRP is mainly due to the action of

a. Estrogen b. INF-τ
c. eCG d. hCG

400. Species in which MRP is not required or absent is

a. Bitch b. Cat
c. Mare d. Both a and b

401. In birds the fertilization process takes place in

a. Infundibulum
b. Ampullary-isthmic junction
c. Fimbrae
d. Utero-tubal junction

402. Proestrus bleeding in bitch is due to

a. Sudden withdrawal of Estrogen
b. High concentration of Estrogen
c. Sudden withdrawal of Progesterone
d. High concentration of Progesterone

403. Transport time of ova in the oviduct for sow is

a. 90 hrs b. 72 hrs
c. 50 hrs d. 98 hrs

404. In bitch the sperm reservoir is located at

a. Utero-tubal junction
b. Endometrial glands
c. Cervical crypts
d. Vaginal cavity

405. Endometrial repair is rapid in sow and mare due to the presence of

a. Cotyledonary type of placenta
b. Diffused placenta
c. Zonary type of placenta
d. Strong immune mechanism

406. Doka is a physiological phenomenon used for estrus detection in ..... species

a. Buffalo b. Cattle
c. Mare d. Doe

407. Fetus is a type of

a. Autograft b. Allograft
c. Semi allograft d. Xenograft

408. .....contributes to the survival of fetal allograft in the cow

a. Alpha fetoprotein
b. Beta fetoprotein
c. Delta fetoprotein
d. Gamma fetoprotein

409. Ovariohysterectomy is considered as risk at diestrus phase of estrus cycle in

a. Mare b. Buffalo
c. Sow d. Bitch

410. Enucleation of ovaries at any stage of gestation results in abortion in

a. Bitch b. Sow
c. Mare d. Both a and b

411. Drug used to reduce the diestrus phase in bitch is

a. Prolactin antagonist
b. Estrogen antagonist
c. Relaxin antagonist
d. Testosterone antagonist

412. Drugs contraindicated during pseudopregnancy in bitch is

a. Metoclopramide b. Acepromazine
c. Domperidome d. All of the above

413. Predominant hormone responsible for pseudopregnancy in bitch is

a. Progesterone b. Relaxin
c. Estrogen d. Prolactin

414. Predominant hormone responsible for cystic endometrial hyperplasia in bitch is

a. Progesterone b. Relaxin
c. Estrogen d. Prolactin

415. Hormone of choice for the treatment of pseudopregnancy in goats is

a. Progesterone
b. Relaxin
c. Estrogen
d. $PGF_2\alpha$

416. Maternal recognition of pregnancy (MRP) is not required or absent in some species due to

a. Absence of acute luteolytic mechanism
b. Gestation length and diestrus length are same
c. Progesterone and prolactin hormone concentration remain same
d. All of the above

417. Radiography for pregnancy diagnosis in bitch can be done from

a. 30 days
b. 20 days
c. 50 days
d. 45 days

418. In ..... type of uterine infection, the vaginal discharge is often clear

a. Subclinical endometritis
b. Metritis
c. Puerperal metritis
d. Endometritis

419. Anestrum is functional disorder of reproductive cycle which is characterized by

a. Presence or absence of CL
b. Presence of CL
c. Presence of follicles
d. Absence of follicles

420. Broadly in clinical aspect, the anestrum is categorized in to two types

a. Class II or True anestrus
b. Class I or False anestrus
c. Both a and b
d. None of the above

421. Rectal examination reveals a mature CL in one of the ovaries and flaccid uterus indicating

a. Proestrs
b. Estrus
c. Metestrus
d. Diestrus

422. Which one of the following are contributing factor to true anestrum

a. Senility
b. NEBL
c. Heavy lactation
d. All of the above

423. Following parturition, all the females undergo anestrus for a variable but short period of time is known as

a. Postpartum anestrus
b. Lactational anestrus
c. Parturitional anestrus
d. Gestational anestrus

424. Serum progesterone level in the true anestrus cow is

a. 5-10 ng/ml
b. 0.5 to 1 ng/ml
c. 0.5 to 1 mg/ml
d. 5 to 10 mg/ml

425. Which one of the following is not the drug of choice for true anestrum

a. GnRH
b. Progesterone
c. Cloprostenol sodium
d. Clomiphene citrate

426. Examination of postpartum anestrus cows at ..... days is necessary to ensure ovarian activity

a. 60-90
b. 40-50
c. 20-30
d. 120-130

427. Rectal examination reveals ..... In true anestrum cows

a. Ovary with cyst
b. Ovary with CL
c. Smooth ovaries
d. None of the above

428. Which one of the following non hormonal drug used for anestrus in cows

a. Buserelin acetate
b. $KMnO_4$
c. CIDR
d. Clomiphene citrate

429. Persistent corpus luteum is notice in

a. Dystocia
b. Dropsy of fetus
c. Fetal mummification
d. Follicular cyst

430. The simple approach for silent estrum during diestrum is .....

a. GnRH b. $PGF_{2\alpha}$
c. Progesterone d. PMSG

431. A tonic uterus with regressing CL and matured follicle is indicative of

a. Anestrum
b. Diestrum
c. Estrum
d. None of the above

432. Which one of the following oral herbal leaves used for anestrus

a. Papaya leaves b. Neem leaves
c. Topioca leaves d. Curry leaves

433. Suckling promotes ..... hormone which suppress GnRH release from hypothalamus

a. GnRH
b. $PGF_{2\alpha}$
c. Progesterone
d. Prolactin

434. Which of the following enzymes are present in the acrosome of the bovine sperm?

a. Trypsin
b. Adenylate cyclase
c. Phospholipase C (PLC)
d. Acrosin

435. After ovulation, which of the following is most important for the rapid movement of the oocyte to the ampular-isthmic junction of the oviduct?

a. Fluid production by the isthmus
b. Cilliary beating in the ampulla
c. Muscle contractions in the ampulla
d. The presence of cumulus cells surrounding the oocyte at ovulation

436. Following artificial insemination in the cow, increased retrograde flow will occur if semen is placed in which of the following locations?

a. Cervix
b. Uterine body
c. Uterine horn, at the greater curvature (half way up the uterine horn)
d. At the distal tip of the uterine horn

437. The concentration of sperm in the ejaculate would be highest among which of the following farm animal species?

a. Bull b. Ram
c. Boar d. Stallion

438. Which of the following are examples of the maturation function in the epididymis?

a. The development of motility
b. Concentration of sperm
c. Secretion of glycoproteins by principle cells
d. Contractions of smooth muscle

439. The ATP produced by sperm does not go towards which of the following?

a. Motility
b. Substrate cycling
c. Maintenance of ionic gradients
d. Transcription and translation

440. If apoptosis of spermatogonia was prevented by inhibition of genes that promote apoptosis, which of the following would occur?

a. More sperm would be produced.
b. The blood testes barrier would be destroyed.
c. The number of round spermatids would increase but the number of spermatozoa would decrease.
d. The process of spermiation would be inhibited

441. Failure of the blood testis barrier would directly prevent

a. Stem cell renewal
b. Spermatocytogenesis
c. Meiosis
d. Spermiogenesis.

442. **Spherical bodies, weighing 0.– 0.9 kg, attached to the placenta of a normal calf comprising of an outer skin enclosing a mass of adipose connective tissue is known as**

a. Perosomus elumbis
b. Otter calf
c. Amorphus globosus
d. Schistosomus reflexus

443. **Obturator paralysis is more common in**

a. Mare b. Bitch
c. Cow d. ewe

444. **The relations of the dorsum of the fetus to the quandrants of the maternal pelvis is**

a. Presentation b. Posture
c. Position d. None of the above

445. **Sterno abdominal presentation is a**

a. Posterior longitudinal presentation
b. Anterior longitudinal presentation
c. Transverse ventral presentation
d. Transverse dorsal presentation

446. **Wry neck is mostly seen in**

a. Bovine b. Equine
c. Caprine d. Canine

447. **Recommended fetotomy procedure in perosomus elumbis is**

a. Amputation of fetal limbs
b. Transverse division of fetal trunk
c. Bisection of pelvis
d. Amputation of head and neck

448. **Generally stallion attains the puberty at the age of**

a. 4 to 7 months
b. 12 to 24 months
c. 9 to 12 months
d. 36 to 42 months

449. **Sertoli cell tumor of the testes in dog secretes**

a. Testosterone b. Androgen
c. Estrogen d. Prolactin

450. **Dystrophia adiposogenitalis is observed in the**

a. Dog b. Boar
c. Stallion d. Ram

451. **Large number of primary sperm abnormalities are indicative of**

a. Ectopic testes
b. Testicular neoplasm
c. Testicular degeneration
d. Testicular fibrosis

452. **Smooth muscle around spermatic cord to help in thermoregulation of testes is**

a. Tunica dartos
b. Pampiniform plexus
c. Cremester muscle
d. Gubernaculum

453. **Mitochondria concentrates close to the axoneme and forms the**

a. End piece of the tail
b. Mid piece of the tail
c. Neck of the sperm
d. Annulus

454. **Unnatural tactile stimulation and ejaculation is known as**

a. Onanism b. Pederasty
c. Coolidge effect d. Balling up

455. **A complete series of cellular associations along a seminiferous tubule**

a. Spermatogenic wave
b. Spermiogenesis
c. Spermiostasis
d. Cycle of seminiferous epithelium

456. **Terminology used for the high per cent of abnormal sperms**

a. Teratozoospermia
b. Asthenozoospermia
c. Aspermia
d. Necrozoospermia

457. **Inability to withdraw the penis back in to the prepuce**

a. Paraphimosis b. Phimosis
c. Posthitis d. Preputial prolapse

458. **Effect of novelty of stimulus females reduces refractory period in males is known as**
   a. Balling up effect
   b. Bruce effect
   c. Coolidge effect
   d. Pederasty

459. **Cystic ovarian degeneration is characterized by anovulatory follicles having greater than ..... cm diameter in cows**
   a. 0.5 b. 2.5
   c. 0.8 d. 1.5

460. **Cystic ovarian degeneration is most prevalent in**
   a. High yielding dairy cows
   b. Low yielding dairy cows
   c. Moderate yielding dairy cows
   d. Dry dairy cows

461. **Nymphomania is a characterized signs noticed in**
   a. Luteal cyst
   b. Follicular cyst
   c. Cystic corpora lutea
   d. Paraovarian cyst

462. **..... Is a thick wall, partially luteinized anovulatory follicles, >2.5 cm in diameter are seen in**
   a. Luteal cyst
   b. Follicular cyst
   c. Cystic corpora lutea
   d. Paraovarian cyst

463. **Excess relaxation of the pelvic ligament leads to tipping of pelvis and elevation of tail head in cystic ovary referred as**
   a. Sterility hump
   b. Adrenal virulism
   c. Buller
   d. Anestrum

Answer Sheet

1. d	2. a	3. a	4. c	5. b	6. a	7. b	8. d	9. b	10. b
11. b	12. a	13. b	14. b	15. c	16. c	17. a	18. b	19. a	20. a
21. b	22. b	23. b	24. b	25. a	26. c	27. b	28. d	29. b	30. c
31. c	32. b	33. c	34. b	35. c	36. a	37. a	38. d	39. d	40. c
41. d	42. c	43. d	44. a	45. a	46. a	47. d	48. b	49. c	50. d
51. b	52. c	53. b	54. a	55. a	56. b	57. d	58. c	59. c	60. b
61. d	62. a	63. c	64. b	65. c	66. c	67. d	68. d	69. b	70. b
71. c	72. c	73. c	74. a	75. a	76. c	77. c	78. a	79. a	80. b
81. c	82. a	83. b	84. c	85. b	86. a	87. a	88. c	89. c	90. a
91. c	92. a	93. b	94. d	95. d	96. c	97. a	98. b	99. a	100. d
101. d	102. c	103. c	104. d	105. c	106. a	107. a	108. b	109. c	110. d
111. d	112. c	113. d	114. d	115. c	116. a	117. c	118. b	119. c	120. b
121. d	122. b	123. a	124. a	125. b	126. b	127. a	128. c	129. d	130. d
131. b	132. d	133. c	134. d	135. a	136. a	137. b	138. a	139. a	140. a
141. d	142. c	143. d	144. c	145. d	146. b	147. a	148. d	149. c	150. d
151. c	152. c	153. d	154. a	155. a	156. b	157. c	158. c	159. b	160. c
161. b	162. c	163. c	164. d	165. c	166. a	167. a	168. c	169. d	170. d
171. d	172. a	173. d	174. d	175. d	176. a	177. a	178. b	179. c	180. a
181. d	182. b	183. b	184. c	185. a	186. b	187. a	188. a	189. a	190. a
191. b	192. d	193. c	194. d	195. d	196. a	197. c	198. d	199. c	200. d
201. a	202. a	203. c	204. d	205. c	206. b	207. b	208. a	209. d	210. d
211. c	212. d	213. c	214. d	215. c	216. a	217. a	218. d	219. a	220. c
221. b	222. a	223. b	224. a	225. c	226. b	227. b	228. c	229. a	230. a
231. b	232. a	233. c	234. d	235. a	236. b	237. b	238. a	239. a	240. a
241. c	242. b	243. c	244. c	245. c	246. b	247. c	248. b	249. d	250. d
251. c	252. b	253. c	254. d	255. b	256. b	257. c	258. b	259. b	260. c
261. b	262. b	263. c	264. a	265. a	266. c	267. a	268. d	269. b	270. a
271. d	272. d	273. a	274. a	275. d	276. d	277. a	278. b	279. b	280. c
281. a	282. a	283. d	284. d	285. d	286. d	287. a	288. d	289. d	290. b
291. d	292. c	293. d	294. a	295. d	296. a	297. d	298. a	299. d	300. b
301. d	302. d	303. d	304. a	305. b	306. a	307. c	308. d	309. a	310. d
311. b	312. a	313. a	314. a	315. d	316. a	317. d	318. d	319. c	320. b

321. a	322. c	323. d	324. d	325. a	326. c	327. b	328. c	329. b	330. d
331. c	332. b	333. c	334. a	335. b	336. a	337. c	338. a	339. b	340. d
341. b	342. d	343. a	344. d	345. d	346. c	347. b	348. d	349. c	350. b
351. b	352. d	353. d	354. d	355. a	356. d	357. d	358. a	359. d	360. d
361. c	362. c	363. b	364. b	365. b	366. b	367. c	368. a	369. c	370. c
371. d	372. a	373. a	374. b	375. c	376. c	377. d	378. c	379. b	380. c
381. b	382. d	383. a	384. b	385. d	386. a	387. c	388. c	389. b	390. b
391. a	392. c	393. d	394. c	395. b	396. c	397. b	398. d	399. a	400. d
401. a	402. b	403. c	404. b	405. b	406. a	407. c	408. a	409. d	410. d
411. a	412. d	413. d	414. a	415. d	416. d	417. d	418. a	419. a	420. c
421. d	422. d	423. a	424. c	425. c	426. a	427. c	428. d	429. c	430. b
431. c	432. d	433. d	434. d	435. c	436. a	437. b	438. a	439. d	440. b
441. c	442. c	443. c	444. c	445. c	446. b	447. b	448. b	449. c	450. a
451. c	452. b	453. b	454. a	455. a	456. a	457. a	458. c	459. b	460. a
461. b	462. a	463. a							

Unit – 8

Veterinary Surgery and Radiology

Suture Material

Suture material	Nature	Remark
Catgut	Absorbable (natural)	Made by collagen taken from submucosa of small intestine of sheep or serous layer of small intestine of bovine Completely absorbed within 90 days Sterilized by: Radiation or Ethylene oxide
Collagen	Absorbable (natural)	Obtained from flexor tendon or tendoachilles of cattle Used in ocular surgery
Kangaroo Tendon	Absorbable (natural)	High tensile strength Used for suturing hernia rings
Cargile Membrane	Absorbable (natural)	Obtained from submucosa of bovine caecum
Polyglycolicacid (Dexon)	Absorbable (synthetic)	Completely absorbed within 120 days Braided Multifilament
Polyglactin 910 (Vicryl)	Absorbable (synthetic)	Completely absorbed within 60-90 days Used in ocular surgery
Polydioxanone (PDS)	Absorbable (synthetic)	Completely absorbed within 180 days Used in tendons and ligaments
Silk/Nylon/Cotton	Non-absorbable	-

Name of surgical operation and their indication

S.No	Name of operation/Techniques	Used for
1.	Caslicks operation	Pneumovagina in horse
2.	Whipples operation	Vaginal prolapse in dog
3.	Mules operation	For prevention of blow fly strike
4.	Staphyloraphy	Cleft palate
5.	Uranoplasty	Cleft palate
6.	Ramstedt operation/ Pyloromyotomy	Pyloric stenosis
7.	Zepp's operation	Otitis externa (chronic)
8.	Myringotomy	Otitis media
9.	Bulla osteotomy	Otitis media
10.	Hobdaying/Tie-back/Ventriculectomy	Roaring
11.	Cordectomy/Ventriculectomy	Debarking
12.	Marsupialization	Pyometra
13.	Onychectomy	Declawing
14.	Fossal's operation	Recto Vaginal Fistula
15.	Enteroplication	Intussusception
16.	Hyovertebrotomy	Guttural pouch empyema
17.	Fribel's apparatus	Kuckling
18.	Luxation of patella	Medial Patellar Desmotomy
19.	String halt/bassi/bokars	Middle Patellar Desmotomy
20.	Paatsama's operation	Rupture of cranial cruciate ligament
21.	Devita pinning	Chronic hip dislocation
22.	Hellar'smyotomy/Esophagomyotomy	Achalasia/Stricture of lower oesophageal sphincter
23.	Utrecht method/Omentopexy	Abomasal displacement (LDA)
24.	Cheiloplasty	Correction of hare lip

Suture pattern

Suture pattern	Organ/tissue
Lambert suture	Hollow organ (uterus, rumen, urinary bladder)
Cushing suture	Hollow organ
Parker Kerr suture	Intestine/Closing of stump
Bunnell mayer	Tendon
Purse string	Rectal prolapse
Simple continuous	Peritoneum, subcutaneous fascia, muscle
Simple interrupted	Skin
Lock stich	Skin
Horizontal mattress	Skin
Gambee suture	Intestine
Schmieden's suture	Intestine
Overlapping/mayomattress	Hernia ring repair
Buhner's suture	Vaginal prolapse

Suture pattern

Suture pattern	Example
Apposition suture	Simple interrupted Simple continuous Continuous lockstitch
Inversion suture	Lambert's suture Czerny's suture Jobert's suture Cushing's suture Connell suture Schmieden's suture
Eversion suture	Horizontal mattress Vertical mattress
Relaxation suture	Quill suture Button suture Far and near suture

Premedication

Premedication	Examples
Anticholinergics	Atropine sulphate, Glycopyrrolate
Transquilizers or neuroleptics	
Phenothiazine derivatives	Chlorpromazine, Acepromazine, Triflupromazine, Promethazine
Butyrophenones	Droperidol, Azaperone, Fluanisone
Benzodiazepines	Diazepam, Medazolam, Climazolam, Zolazepam and Flumazenil
Sedatives	
Alpha 2 adrenergic agonist	Xylazine, Detomidine, Meditomedine, Romifidine
Chloral hydrate (Sedative hypnotic)	
Opioid agents	
Pure agonist	Morphine, Meperidine, Fentanyl citrate, Pathadine, Oxymrphone, Etorphine
Pure antagonist	Naloxone hydrochloride, Nalorphine hydrochloride Diprenorphine

Local Anaesthetics

Cocaine

1. It is an extract from the leaves of Erythroxylum coca.
2. It is an irritant and toxic in small doses.
3. The toxic manifestations include clonic convulsions, loss of consciousness and paralysis of medullary centres.
4. The maximum dose is 780 mg in horses, 120mg in large dogs, 45 mg in small dogs and 15 mg in cats.
5. Cocaine was used as a doping agent in horses.
6. Only topical preparations are available for eye (4% solution) nasal and laryngeal areas (10 to 20% solutions)

Procaine hydrochloride

1. It is a short acting local anaesthetic derived from ester.
2. It is detoxified in the blood and liver rapidly.
3. The margin of safety is high in terms of convulsive dose (35 mg/kg in cats).
4. In clinical practice it is administered intravenously to relieve pain in fire injured patients.
5. It is also used as adjunct to thiopentone sodium to maintain anaesthesia.
6. Procaine is combined with adrenaline 1 in 100000 to potentiate its anaesthetic action.

Lidocaine hydrochloride

1. It is a fast acting amide local anaesthetic detoxified in the liver.
2. The convulsive dose is 15 mg/kg in cats.
3. Goats are extremely sensitive to lignocaine. The total dose should never be exceeded 10 mg/kg in any route. The toxic manifestations in goats are excitation, tonic clonic convulsions, opisthotonus, respiratory depression, cardiac arrest and death.
4. It is often combined with thiopentone due to its dysrhythmic property and protective action on myocardium.
5. In clinical practice adrenaline free lignocaine is administered intravenously at the rate of 0.25 mg/kg in cats and 2 mg/kg in dogs to control cardiac arrhythmia due to myocardial ischemia.
6. The local anaesthetic preparation is marketed in combination with adrenaline 1 in 200000. It is also available as 2% jelly and 2.5% and 5% viscous ointments. The duration of action is two hours.

Bupivacaine hydrochloride

1. Bupivacaine is a fast and long acting amide derivative
2. Its margin of safety is less.
3. Intravenous administration induces mdyocardial depression.
4. Bupivacaine associated ventricular dysrhythmia is due to prolonged inhibition of conductance in the cardiac muscles.
5. It is not combined with general anaesthetics.
6. High molecular weight substance like dextran is added to prolong the duration of action in obstetrical anaesthesia.

Injectable anaesthesia

Group	Example
Barbiturates	Thiobarbiturate e.g. thiopentone sodium, thiamylal sodium Methylated oxybarbiturate e.g. methohexitone sodium Oxybarbiturate e.g. phentobarbital sodium
Dissociative anaesthetics	Ketamine hydrochloride Tiletamine Phencylidine
Steroid anaesthetics	Combination of Alphaxalone and alphadolone e.g. Saffan, Althesin
Imidazole derivatives	Etomidate Metomidate
Alkyl phenols	Propofol
Opioid synthetic analgesics	Fentanyl citrate Alfentanil Sufentanil Lofentanil Etorphine
Neuroleptanaesthetic mixture	Droperidol and Fentanyl Fluanisone and Fentanyl Etorphine combinations
Centrally acting muscle relaxants	Glyceryl Quaiacolate
Chloral hydrate	-

Classification of Barbiturates

Classifications	Duration of actions	Examples
Long acting	8 to 12 hrs or more	Barbitone Phenobarbitone Methyl phenobarbitone
Intermediate acting	4 to 8 hrs	Bentobarbitone Amylobarbitone Cyclobarbitone Butobarbitone

Short acting	2 to 4 hrs	Hexobarbitone Secobarbitone Quinal barbitone
Ultra short acting	Less than 1 hrs	Thiopentone Thiamylal and Metohexitone

Anesthetic Emergency Drugs

Drugs	Dose (mg/kg)	Indications
Doxopram (Dopram)	1-5, IV (10X in farm animals)	Respiratory stimulant, for complete respiratory arrest only, use with CPR
Furosemide (Lasix)	2- IV, IM	For pulmonary edema. Administer as needed
Naloxone (Narcan)	0.04, IV	For reversal of narcotic sedation or respiratory depression
Yohimbine	0.1-0.15, IV	Reversal of xylazine or detomidine sedation
Atropine	0.02-0.04, IV	For bradycardia
Epinephrine	0.1, IV	For cardiac arrest only. Administer IV

Important Terminology

Ablation - Removal of an organ, or part of an organ, by surgery.

Abrasion - A superficial wound of skin or mucous membrane caused by chaffing, rubbing, etc.

Achondroplasia - Achondroplasia is a form of dwarfing due to disease affecting the long bones of the limbs before birth.

Acromegaly - A condition caused by excess of the growth hormone STH, produced by the anterior lobe of the pituitary gland, leading to enlargement of the extremities and to overgrowth of connective tissue, bone and viscera.

Adenomatosis - The formation of numerous adematous growths in an organ.

Adenopathy - Swelling of the glands, particularly the lymph glands.

Allograft - A piece of tissue, or a complete organ, transplanted from one animal to another of the same species.

Amputation - Removal of a limb.

Anamnesis - Anamnesis is the past history of a particular patient.

Anthroponoses - Diseases transmissible from man to lower animals.

Anal glands (sacs) - There are two of these in the dog, situated below and to each side of the anus. They produce a malodorous fluid which possibly acts as a lubricant to aid defaecation or as a means of territorial marking. Each gland has a duct opening just inside the anus. These ducts may become blocked by a grass seed or other foreign body, so that the secretions cannot escape and the glands swell; but more commonly there is infection. Irritation or pain then results. It may be necessary to manually express the glands to relieve the blockage, or to remove them surgically.

Signs include yelping on sitting down, and tail-chasing; more commonly the dog drags itself along the ground ('scoots') or licks its hindquarters in a effort to obtain relief.

Perianal fistulae may be due to a number of causes including rupture of the anal sac, inflammation or ulceration. Except in mild cases, the condition may be difficult to treat, surgically or otherwise.

Signs include pain on defaecation and a bad smell. German shepherd dogs are said to be susceptible to the condition.

Aponeurosis - Aponeurosis is a sheet of tendinous tissue providing an insertion or attachment for muscles.

Arthroscopy - The application of endoscopic techniques to the study of joint cavities.

Arthrosis - Degenerative disease of a joint, as opposed to inflammation.

Artifact - An apparent lesion in a histological or pathological specimen, not existing during life, but made accidentally in preparing the specimen.

Atherosclerosis - A condition in which deposits of cholesterol and other material in the inner lining (intima) of arteries restricts the blood flow.

Azotaemia - The presence of urea and other nitrogenous products in greater concentration than normal in the blood.

Barn Itch - The American name for sarcoptic mange in cattle.

Barrow - A castrated male pig.

Bars of Foot - At each of the heels of the horse's foot the wall turns inwards and forwards

instead of ending abruptly. These 'reflected' portions are called the bars of the foot.

Becquerel - The standard unit for measuring radioactivity.

Bog Spavin - An old name for chronic synovitis of the hock (*tarsus*) of horses. It often shows as a swelling of the front of the hock joint caused by fluid. It seldom causes lameness.

Bone - Bone is composed partly of fibrous tissue, partly of phosphate and carbonate of lime. Since the bones of a young animal are composed of about 60 per cent fibrous tissue, and those of an old animal of more than 60 per cent of lime salts, one readily understands the toughness of the former and the brittleness of the latter. Two kinds of bone are:

» ***Compact bone (dense bone)***, such as forms the shafts of the long bones of the limbs.

» ***Cancellous or spongy bone***, found in the short bones and at the ends of the long bones.

Dense bone is found in a tube-like form, with a central cavity in which normally *yellow marrow* is found, composed mainly of fatty substances; the walls of the tube are stout and strong, and the outer surface is covered by '**bone membrane**' or **periosteum.**

Cancellous bone has a more open framework, is irregular in shape, and, instead of possessing a cavity, its centre is divided into innumerable tiny spaces by a fine network of bony threads, which support the important *red marrow*.

» All bone is penetrated by a series of *Vertical* fine canals (*Haversian canals*), in which run blood vessels, nerves, lymph-vessels, etc., for the growth, maintenance, and repair of the bone. *Haversian canals* are joined by horizontal *Wolkman canal.*

Varieties of Bone Apart from their structural classification, bones are arranged according to their external shape into:

(a) Long bones, like those of the limbs

(b) Short bones, such as those of the 'knee' and hock

(c) Flat bones, such as those of the skull and the shoulder-blade

(d) Irregular bones, such as those of the vertebral column

(e) The 'spongy' bones of the feet of horses and cattle and the claws of other animals.

The Skeleton has:

(1) An axial part, consisting of the skull, the vertebrae, the ribs with their cartilages, and the sternum or breast-bone; and

(2) An appendicular portion, consisting of the four limbs.

In addition to these divisions, certain parts of the skeleton are embedded in the substance of organs, and are described as the **visceral skeleton**, e.g. the bones in the heart of the ox, the snout of the pig, the penis of the dog, etc.

Diseases

Growth-plate disorders The growth-plate is a layer of cartilage between the diaphysis and the epiphysis of a long bone. Failure of chondrogenesis leading to cessation of growth is commonly the result of trauma to the plate, occasioned by a fracture or crush injury, or of the interruption of the vascular supply to the germinal cells. Diseases such as scurvy, rickets, osteomyelitis and endocrine disorders make the plate more vulnerable to injury and predispose to epiphyseal separation.

Acute inflammation **of bone is divided into**

- Acute *periostitis* inflammation of the surface of the bone and its covering membrane, the periosteum.
- Acute *osteitis* or ostitis, inflammation of the bone substance itself.
- Acute *osteomyelitis*, inflammation in the bone and the central marrow cavity.
- Acute inflammation of the bone surface almost always results from external violence.
- Osteomyelitis is usually due to bacteria gaining access either through the blood or lymphstreams.
- Complete rest is essential
- Hot fomentations, poultices, soothing and cooling liniments or applications are usually sufficient treatment for mild cases.
- The severe cases, in which infection has reached the bone, antibiotics, or immediate opening up of the area and the elimination of any pus that has collected.
- Any pieces of dead bone that are present are removed, and the wound treated as an infected open wound.

Chronic inflammation may result from several conditions, e.g. tuberculosis, actinomycosis, etc. Generally speaking, when a chronic suppurative inflammation affects a bone, sooner or later the pus and debris of a liquid nature will burrow through the surrounding tissues and burst on to the surface of the skin. A discharging sinus results which proves intractable to treatment. The offending dead portion of bone must be removed in the first instance, and the whole sinus tract must be laid open. This is not always an easy matter, and much depends upon the situation of the pieces of dead bone (*sequestrum*), as well as of the mouth of the sinus. The area afterwards is treated as an open wound, and if all the necrotic parts have been removed, recovery generally takes place.

Exostosis - is an outgrowth of rarefied bone tissue upon the surface of a bone.

Tumours of bone The commonest of these is the osteosarcoma of the limb-bones of dogs. There is swelling and pain.

Rickets is a disease of young animals in which the bones of the limbs are affected and often small pea like swellings are found at the junction of each of the ribs with its cartilage.

Osteomalacia is the equivalent of rickets occurring in the adult animal, especially during pregnancy.

Osteodystrophic diseases are due to incorrect calcium: phosphorus ratio in the diet, or to lack of one or more of the minerals – calcium, phosphorus, magnesium, and sometimes manganese.

Porphyria is a rare disease, hereditary in origin, occurring in man, cattle, and pigs. It is characterised by *brown or pinkish discoloration of the bones and teeth*, and by changes in the urine.

Bone Spavin - Osteitis or arthritis of the lower hock- joints of the horse. The animal is often lame; there may or may not be a hard, bony swelling.

Bran - A bran diet is deficient in calcium and high in phosphorus. *Osteodystrophia fibrosa* is seen in horses fed predominantly on bran

'Broken Wind' ('Heaves') - Both are outdated expressions applied to horses with long-standing respiratory diseases, usually referred to as chronic obstructive pulmonary disease (COPD). 'Heaves' is the colloquial name for a condition in which double expiratory effort is a feature.

Bruises - The discoloration caused by bleeding under unbroken skin following a blow or other trauma.

Bursae - Bursae are natural small cavities interposed between soft parts of the structure of the body where unusual pressure is likely to occur. They are found between a tendon or muscle, and

some underlying harder structure, often a bony prominence, between fascia and harder tissue, and some are interposed between the skin and the underlying fascia. They are lined by smooth cells which secrete a small quantity of lubricating fluid.

Bursitis - Inflammation within a bursa.

Acute bursitis is generally due to external violence. In horses, it commonly occurs after run away accidents, falls, continued slipping when driven at fast paces, and after kicks in the shoulder, where the bursa of the biceps tendon is involved.

Chronic bursitis The walls of the bursa increase in thickness, more fluid than usual is poured out, leading to a soft, almost painless swelling. Later this becomes hard, and fibrous tissue

invades the clotted material. '*Capped elbow*' and '*capped hock*' in the horse are instances of the condition due to lying on hard floors for a long period, or in the case of the elbow to the calkins of the shoe; 'lumpy withers' are of the same nature, due to the pressure of a badly fitting saddle, and often lead to fistulous withers; *hygroma* or 'big knees' in cattle result either from a shortage of bedding at the front of the stall, or from the animals continually striking their knees on a too high feeding trough when rising.

Caesarean Section - An operation in which the fetus is delivered by means of an incision through the wall of the abdomen and uterus.

Callus - Callus is the lump of new bone that is laid down during the first 2 or 3 weeks after fracture, around the broken ends of the bone, and which holds these in position.

Canaliculus - A small channel

Capped Hock - Capped hock is a term loosely applied to any swelling over the point of the hock. At this point there are two bursae: the first – a false bursa, distension of which constitutes true 'capped hock'– lies between the skin and the tendon which plays over the bone; and the second, the true bursa, separates the tendon from the bone. The lesion is virtually identical with that of capped elbow

Cataract - Cataract is opacity of the crystalline lens of the eye.

Cellulitis - Usually refers to a diffuse swelling in the subcutaneous tissues. Sometimes implies a diffuse area of inflammation and suppuration, as compared with an abscess which is localised.

Cheilosis - Cracked and scaly lips, often also affecting the corners of the mouth and associated with vitamin B deficiency.

Chemosis - Chemosis means swelling of the conjunctival membrane that covers the white of the eye, leaving the cornea depressed.

Cholagogues - Cholagogues are substances reputed to act on the liver, increasing the secretion of the bile.

Cholangiocarcinoma - Cancer of the bile ducts.

Cholangiohepatitis - Inflammation of bile ducts and associated liver parenchyma.

Cholangioma - A benign tumour originating from the bile ducts, and occurring in cats, dogs, sheep, and poultry.

Cholangitis - Inflammation of the intra-hepatic bile ducts.

Cholecystitis - Inflammation of the gall-bladder.

Cholecystography - Cholecystography is the term used for X-ray examination of the gall-bladder after its contents have been rendered opaque by administration of lipiodol.

Cholecystomy - A surgical incision into the gall-bladder.

Chondritis - Inflammation of cartilage.

Chondroma - A rare tumour, composed of cartilage-like cells

Cicatrix - Cicatrix is a scar.

Chyle - The milky fluid which is absorbed by the lymphatic vessels of the intestine. The fluid mixes with the lymph and is discharged into the thoracic duct.

Chyme - Chyme is the partly digested food passed from the stomach into the first part of the small intestine. It is very acid in nature.

Clonic - Clonic is a word applied to spasmodic movements of muscles lasting for a short time only.

Consolidation - Solidification of an organ, especially of a lung.

Corns - A bruise of the sensitive part of the horse's foot occurring in the angle formed between the wall of the hoof at the heel and the bar of the foot. In the majority of cases the horse goes very lame either gradually or suddenly. When made to walk he does so by using the toe of the affected foot, keeping the heels raised.

Curb - Curb is a swelling which occurs about a hand's breadth below the point of the hock, due to sprain, or local thickening of the calcaneocuboid ligament, or to similar conditions affecting the superficial flexor tendon. Lameness is usually present at first.

Discospondylosis - Inflammation of the intervertebral discs of the spinal column.

Dislocation - Dislocation is a displacement of a bone from its normal position in relation to a joint.

Distichiasis - Distichiasis is the presence of a double row of eyelashes, of which one or both rows are turned in against the eyeball, causing inflammation. It may lead in dogs to EPIPHORA.

Drowning - Submersion in water for a period of about 4 minutes is sufficient to cause asphyxia and death, but shorter periods, while they may cause apparent death, usually only produce a collapse from which recovery is possible.

Enarthrodial Joints - Enarthrodial joints are those of the ball-and socket type which allow movement in nearly any direction

Enteroliths - Enteroliths are stones that develop in the intestines, being formed by deposition of salts round a hard metallic or other nucleus.

Enterostomy - Enterostomy means an operation by which an artificial opening is formed into the intestine.

Enzootic - Enzootic refers to a disease present (endemic) among animals in a particular region, country, or locality.

Exostosis - An outgrowth from a bone.

"Flail Chest" - A condition which may result when one or more ribs are fractured in 2 places; the damaged area moves slightly inwards on inspiration, and outwards on expiration.

Fistula - An unnatural narrow channel leading from some natural cavity, such as a duct of the mammary gland, or the interior of the rectum or anal gland, to the surface.

'Goose-Stepping' - In the pig this can be a symptom of a deficiency of pantothenic acid

'Gut-Tie' - 'Gut-tie' is the colloquial name for a type of hernia in which a piece of bowel becomes entangled in the spermatic cord following castration of cattle.

Haematothorax An effusion of blood into the pleural cavity.

'Hardware Disease' - The colloquial American name for traumatic pericarditis of cattle caused by metal objects, such as nails or pieces of baling wire.

Hip Dysplasia in Dogs - This term covers a number of abnormal conditions of the acetabulum and head of the femur. Some of these conditions are hereditary.

They include:

1. Subluxation, in which the head of the femur is no longer firmly seated within the acetabulum. Deformity of the head of the femur gradually develops. The symptoms include a reluctance to rise from the sitting position, and a sawing gait, observed when the puppy is 4 or 5 months old.
2. Osteochondritis dissecans is seen in terriers with short legs, poodles, and Pekingese. It is possibly identical with Perthe's disease. Muscular wasting and lameness are observed, usually in 1 limb.
3. Slipped epiphysis. This also causes pain and lameness at 4 to 6 months.
4. Congenital dislocation, in which the acetabula are too shallow to retain the heads of the femurs in position. A false joint forms in time.

Hydrocele - Hydrocele means a collection of fluid present within the outer proper coat of the testicle (tunica vaginalis) or within the spermatic cord.

Hydrometra - Another name for pseudopregnancy, it is the accumulation of a watery fluid within the uterus.

Hygroma Hygroma is a swelling occurring in connection with a joint, usually the knee or hock, and the result of repeated bruising against a hard surface. Hygroma in cattle may arise through an insufficiency of bedding, or through faulty building design.

Idiopathic - Idiopathic is a term applied to diseases to indicate that their cause is unknown.

Ileitis - Inflammation of the ileum.

Incompetence - Inability to function effectively.

Incontinence - Inability to control faecal and urinary function.

Keratitis - Inflammation of the cornea.

Keratocoele - Keratocoele is a hernia through the cornea.

Keratoma - Keratoma is a horn tumour affecting the inner aspect of the wall of the hoof.

Osteoarthritis (Osteoarthrosis) - Inflammation/degeneration of the bone at a joint. this is a degenerative rather than an inflammatory disease. The primary disturbance is usually regarded as occurring in articular cartilage, and as resulting from a combination of ageing and mechanical factors. An alternative hypothesis is that the disease originates in the synovial lining cells.

Osteoblasts - Cells which assist in the formation of bone.

Osteochondritis - Inflammation of bone and cartilage.

Osteochondritis Dissecans - Osteochondritis dissecans is a disturbance in the endochondral ossification (conversion of cartilage into bone) affecting the growth plates and the articular cartilage. Clinical signs include lameness and abnormal gait. There is pain around the affected joints. The stifle and hock may be more severely affected as they bear greater weight.

Osteochondrosis - Abnormal differentiation of cartilage. There may be necrosis of bone and separation of splinters or flaps of articular cartilage.

Osteoclasts - Cells which aid the breakdown or resorption of excess bony tissue, laid down following fractures, as part of the repair process.

Osteodystrophia Fibrosa - A degenerative condition of bone resulting from over-activity of the parathyroid gland. Affected animals show lameness, pain, incoordination, paralysis, curvature of the spine, fractures and constipation.

Osteodystrophic Diseases - Osteodystrophic diseases are conditions in which the metabolism of the bone is upset.

Osteogenesis Imperfecta - A failure of bone to develop properly in young animals. Animals show incoordination, and pain at the joints; they may be prone to greenstick or complete fractures. Rest is necessary; anti-inflammatory medication will relieve the pain.

Osteomalacia - Osteomalacia is the equivalent of rickets occurring in the adult animal. The bones become softened as the result of the loss by absorption of the salts they contain. it appears to be more common in pregnant females, and it may be associated with a deficiency of vitamin D and P.

Osteopenia - A reduction in the body's bone tissue.

Osteopetrosis ('Marble Bone' Disease) - is characterized clinically by thickening of the legs of poultry

Osteophagia - Osteophagia means bone-eating, and is a symptom shown by sheep and cattle where soil and herbage are deficient in phosphorus and sometimes in calcium.

Osteoporosis - Osteoporosis is a rarefying condition of bones which lose much of their mineral matter and become fragile. It can occur in young animals through deficiency of protein in the diet, and in older animals through lack of exercise.

Panosteitis - A condition in which an entire bone is inflamed.

Terminology related to antisepsis

Asepsis - being free of disease-producing microorganisms.

Contaminated - dirty, unclean, soiled with presence of germs.

Disinfection - the process of destroying most, but not all, pathogenic organisms.

Medical Asepsis - the practice used to remove or destroy pathogens and to prevent their spread from one person or place to another person or place, clean technique.

Microorganism - a living body so small that it can only be seen with the aid of a microscope.

Sterilize - to kill all microorganisms including spores.

Antisepsis - is the destruction of micro organisms but not bacterial spores on living tissue.

Antibiotic - A substance derived from mould or bacteria that inhibit the growth of other micro-organisms.

Astringent - Causes contraction of tissues and so arrests haemorrhage.

Styptic - Astringent, haemostatic agent used externally to stop flow of blood.

Haemostatic - Arresting flow of blood within a vessel.

Sterilization - Complete elimination of microbial viability including both the vegetative forms of bacteria and spores process by which an article can be rendered free from all forms of living microbes including bacteria, fungi and their spores and viruses

Multiple Choice Questions

1. **The suture pattern used for suturing abomasal wound is**
   a. Cushing suture b. Lembert suture
   c. Connell suture d. Halstead suture

2. **A non-ionic contrast medium used for myelography**
   a. Trazograph b. Omnipaque
   c. Hypaque d. Sod. Iopodate

3. **Most ideal parenteral fluid of choice for treatment in burn**
   a. Dextrose saline
   b. Plasma
   c. Polyionic isotonic saline
   d. Blood

4. **In male dogs, the common site of lodging of urethral calculi is**
   a. Bladder neck
   b. At the level of ischial arch
   c. Just behind the level of os penis
   d. At the pelvic urethra

5. **In buck, urethral calculi are usually lodged at the**
   a. Urethral process b. Ischial urethra
   c. Bladder neck d. Sigmoid flexure

6. **Shoe boil is a condition of horse, affecting the**
   a. Point of elbow
   b. Posterior hock region
   c. Anterior knee region
   d. Anterior stifle region

7. **Synovitis of great sesamodean sheath is called as**
   a. Navicular disease b. Shoe boil
   c. Wind gall d. Bowed tendon

8. **Peroneal tenotomy is indicated for the treatment of**
   a. Stringhalt b. Bog spavin
   c. Knuckling d. Curb

9. **Tenotomy of flexor tendon is indicated for the treatment of**
   a. Sprain b. Knuckling
   c. Buttress foot d. Curb

10. **Friebel's apparatus is indicated in the treatment of**
    a. Quittor
    b. Seedy toe
    c. Knuckling
    d. Sectioning of flexor tendon

11. **Pannus is a symptom of**
    a. Cataract b. Glaucoma
    c. Retinitis d. Keratitis

12. **Ptosis is a symptom due to the paralysis of**
    a. Auriculo palpebral nerve
    b. Infra orbital nerve
    c. Optic nerve
    d. Mandibular nerve

13. **Sweeny is a disease condition due to paralysis of**
    a. Radial nerve
    b. Anterior tibial nerve
    c. Supra scapular nerve
    d. Sciatic nerve

14. **In radiographic parameters, one of the following is considered constant**
    a. Time
    b. Part film distance
    c. Kilo voltage peak
    d. Milliamp rage seconds

15. **The scattering of x-rays from the tube is prevented by the use of**
    a. Lead outer cover b. Diaphragm
    c. Cone d. Grid

16. **Urethral calculi in cats in the form of**
    a. Small concretions
    b. Sand like particles
    c. Large stones
    d. Small stones

17. Staphyloma is a sequelae of

a. Conjunctivitis b. Cataract
c. Iridocyclitis d. Corneal ulcer

18. Increase in intraocular pressure is called

a. Cataract b. Glaucoma
c. Hydrophthalmus d. None of these

19. Collimator in an x-ray machine is used to decide the

a. Field of radiation
b. Distance of X-rays
c. Type of radiation
d. Direction of x-rays

20. Ramstedt's operation is done in

a. Achalasia
b. Stricture of lower oesophageal sphincter
c. Stricture of colon
d. Pyloric stenosis

21. Hobdaying is an operation indicated for

a. Stenosis of oesophagus
b. Paralysis of recurrent laryngeal nerve
c. Stenosis of pylorus
d. Ablation of ear canal

22. Hyovertebrotomy is an operation indicated for

a. Intervertebral disc disease
b. Fracture of vertebrae
c. Empyema of guttural pouch
d. Empyema of frontal sinus

23. Intervertebral disc disease is most frequently encountered in

a. Dachshund
b. Cocker Spaniel
c. Labrador Retriever
d. Chinese Pug

24. Widening the hernia ring is called

a. Canthotomy b. Kelotomy
c. Coeliotomy d. Commissurotomy

25. Myringotomy is an operation indicated for

a. Otitis externa b. Otitis media
c. Otitis interna d. Haematoma auris

26. During closure of thoracotomy wound negative pressure in the pleural cavity is to be established to avoid

a. Lung adhesion
b. Collapse of lung
c. Pleural effusion
d. None of these

27. A horse is said as broken down when it suffers from

a. Rupture of Achilles tendon
b. Rupture of flexor tendon
c. Rupture of suspensory ligament
d. Fracture of vertebral column

28. An osteoarthritic condition affecting only the hind limb in horses

a. Splint b. Spavin
c. Quitor d. Keratoma

29. Cunean tenotomy is a surgical treatment recommended for

a. Stringhalt b. Bog spavin
c. Bone spavin d. Curb

30. Common seat of oesophageal obstruction in cattle is at

a. Cervical oesophagus
b. Thoracic oesophagus
c. Gastro oesophageal junction
d. All the three

31. Inflammation of hard palate is called

a. Palatitis b. Gingivitis
c. Gnathitis d. Typhalitis

32. Accumulation of pus in the guttural pouch is called

a. Empyema
b. Septicemia
c. Emphysema
d. All the above

33. The serosal layer of oesophagus is

a. Thick
b. Thin
c. Thinnest among all the parts of GIT
d. Absent

34. Shaking of the head and scratching of the ear are commonly observed in

a. Otitis externa b. Otitis interna
c. Otitis media d. Palatitis

35. Which among the following is not a part of uvea?

a. Iris b. Lens
c. Ciliary body d. Choroid

36. Reaction of living tissue to injury is known as

a. Wound b. Inflammation
c. Infestation d. Infection

37. Inguinal Hernia is also known as

a. Omphalocele b. Oscheocele
c. Bubanocele d. None of the above

38. Abscess involving sebaceous gland is called

a. Acne b. Furnuncle
c. Boil d. Carbuncle

39. Inflammation of the ligament is known as

a. Tendinitis b. Desmitis
c. Cellulitis d. None of the above

40. Circumscribed lesions fails to undergo the natural process of healing is known as

a. Cyst b. Wound
c. Ulcer d. Sinus

41. Example of cosmetic surgery in veterinary practice is

a. Ear cropping b. Debeaking
c. Anal gland ablation d. Dehorning

42. Tumour composed of blood vessels and lymphatics is known as

a. Glioma b. Myxoma
c. Angioma d. Neuroma

43. Abnormal large amount of granulation tissue is known as

a. Callus b. Proud flesh
c. Adenoma d. Sarcoma

44. Blood in the vomitus is known as

a. Haematemesis b. Haemoptysis
c. Haematoma d. Epistaxis

45. Treatment of catgut with chromic acid

a. Fastens absorption
b. No effect on absorption
c. Delays absorption
d. prevents infection

46. Adhesion/fusion of the eyelid is known as

a. Symblepharon b. Pterygium
c. Ankyloblepharon d. Isoblepharon

47. Opacity of lens of eye is termed as

a. Glaucoma b. Cataract
c. Cloudiness d. Uveitis

48. Schiotz tonometer is used for the diagnosis of

a. Keratitis b. Corneal opacity
c. Conjunctivitis d. Glaucoma

49. Collection of blood in anterior chamber of eye is known as

a. Aniridia b. Iridocyclitis
c. Hypopion d. Hyphaema

50. Prosthetic material preferred for hernioplasty is

a. Plain sheet b. Rough surface
c. Synthetic mesh d. All the above

51. HBM Mixture is combination of

a. 100 mg Diazepam - 125 mg Ketamine
b. 125 mg Xylazine - 100 mg Ketamine
c. 100 mg Acepromazine - 100 mg Ketamine
d. 100 mg Acepromazine - 100 mg Xylazine

52. Reversal of etorphine HCL is

a. Yohimbine HCl
b. Diprenorphine
c. Atipamasole HCL
d. 4 amino pyrilidone

53. Etrophine is _____ times more potent than morphine

a. 100 b. 1000
c. 10,000 d. 1,00,000

54. Ideal time for darting a wild animal is

a. Early forenoon b. Late night
c. Morning d. all of the above

55. Dose of Etorphine in asciatic elephant is

a. 0.5 mg/ 450 kg b. 1 mg/450 kg
c. 10 mg/450kg d. 100 mg/450 kg

56. Snakes are better restrained by

a. Physical method
b. Chemical method
c. Both a and b
d. None of the above

57. Father of Veterinary laparoscopy is

a. Lettow b. Kelling
c. Bozzini d. Carlson

58. NS (Normal saline) is an example of

a. Colloids
b. Suspension
c. Crystalloids
d. Non soluble liquid

59. Prior to autoclaving, drapes should always be folded in

a. Triangular fashion
b. Rectangular fashion
c. Accordian fashion
d. All the above

60. Rickets in pups is seen due to the deficiency of

a. Vitamin A b. Vitamin C
c. Vitamin D d. Vitamin B

61. The megaoesophagus is a disorder due to

a. Hypermotility b. Choke
c. Hypomotility d. None of the above

62. The formation of CSF takes place in

a. Spinal cord b. Cerebrum
c. Cisterna magna d. Choroid plexus

63. The cartilaginous tracheal rings are incomplete in

a. Bovines b. Equines
c. Both a and b d. None

64. Inflammation of inter-dental space is known as

a. Gnathitis b. Ranula
c. Gingivitis d. Palatitis

65. Spiral fracture is most common in

a. Femur b. Tibia
c. Radius d. Humerus

66. A condition in which urine dribbles from umbilicus and area remains wet is

a. Obstructive urolithiasis
b. Pervious urachus
c. Rupture of urethra
d. Traumatic peritonitis

67. Liptek test is used to diagnose

a. Abomasal displacement (LDA)
b. Traumatic pericarditis
c. Diaphragmatic hernia
d. All the above

68. In horse, the position of the sigmoid flexure is

a. Post scrotal b. Pre scrotal
c. Ischial d. Absent

69. A condition in which the heart is present outside the thoracic cavity is known as

a. Tetralogy of fallot
b. Ectopia cardis
c. Patent foramen ovale
d. All the above

70. Fixation of uterus with pelvic or abdominal wall is called

a. Vaginopexy b. Hysteropexy
c. Cystopexy d. Cervicopexy

71. Recurrence of abomasal displacement can be prevented by

a. Rumenotomy b. Abomasopexy
c. Abomasotomy d. Abomasectomy

72. Oils and paraffins are sterilized by

a. Boiling
b. Autoclave
c. Hot air oven
d. UV radiations

73. Prior to major surgery and wound management in horses, injection of ..... is mandatory

a. Antibiotics
b. Tetanus antitoxin
c. Styptics
d. NSAIDS

74. A condition in which intra ocular pressure increases is termed as

a. Glaucoma
b. Cataract
c. Ptosis
d. None of the above

75. Roaring/Laryngeal hemiplagia in horses occurs due to paralysis of

a. Left recurrent laryngeal nerve
b. Right recurrent laryngeal nerve
c. Vagus nerve
d. None of the above

76. Drooping of upper eyelid is known as

a. Ptosis
b. Glaucoma
c. Paratosis
d. Entropion

77. Aural haematoma is common in

a. Dogs
b. Horses
c. Cats
d. Cattle

78. Sit fast is commonly seen in

a. Dogs
b. Horses
c. Goats
d. Cattle

79. Epiphora is the term used to denote

a. Excessive happiness
b. Excessive lacrymation
c. Excessive laughing
d. Excessive sadness

80. Descematocele is an affection of

a. Retina
b. Lens
c. Scelera
d. Cornea

81. Guttral pouches can be drained surgically through

a. Pharynx
b. Viborg's triangle
c. Larynx
d. All of the above

82. Steroidal anti-inflammatory drugs should always be administered along with

a. Analgesics
b. Antipyretics
c. Antibiotics
d. All of the above

83. The distinct representation of an object's true borders or edges is termed as

a. Contrast
b. Pnumbra
c. Details
d. Density

84. Horn cancer is a type of

a. Squamous cell carcinoma
b. Squamous cell papilloma
c. Squamous cell sarcoma
d. All of the above

85. Hardest substance of the teeth is

a. Crown
b. Cementum
c. Dentine
d. Enamel

86. Schirmer's tear strip test is performed for the diagnosis of

a. Glaucoma
b. Cataract
c. Corneal ulcer
d. Dry eye condition

87. The surgical procedure indicated for treatment of chronic otitis or otorrhoea is

a. Ear ablation
b. Aural haematoma
c. Lateral resection of ear canal
d. All of the above

88. From 4th cervical vertebrae to 3rd thoracic vertebrae the oesophagus occupies

a. Ventral to trachea
b. Left to trachea
c. Right to trachea
d. Dorsal to trachea

89. The rumen can be approached through

a. Left paralumbar fossa
b. Right paralumbar fossa
c. Midline approach
d. None of the above

90. Inflammation of the stifle joint is called

a. Arthritis
b. Gonitis
c. Omarthritis
d. Stiflitis

91. Mid-shaft fracture of femur in dogs can be best treated by
a. Intra-medullary pinning
b. POP cast
c. Hanging cast
d. None of the above

92. Chronic, hypertrophic, moist, eczematous dermatitis involving foot of horse is called
a. Canker b. Curb
c. Quitter d. Dermatitis

93. Knuckling of fetlock is observed due to
a. Shortening of extensor of knee
b. Shortening of flexor tendon
c. Exostosis of phalangeal bone
d. None of the above

94. Exostosis of phalangeal bone is known as
a. Side bone
b. Pyramidal disease
c. Ring bone
d. Navicular disease

95. Amputation of tail is indicated in
a. Tail gangrene
b. Irrepairable injuries of tail
c. Both a and b
d. None of the above

96. The branch of dentistry concerned with irregularities of teeth and malocclusion is called
a. Periodontics b. Exodontics
c. Endodontics d. Orthodontics

97. During tracheotomy, the incision on trachea is given on
a. Annular ligament
b. Tracheal rings
c. Tracheal muscles
d. All of the above

98. Surgical repair/suturing of hernial ring is known as
a. Herniorraphy
b. Kelotomy
c. Hernioplasty
d. None of the above

99. Best technique for suturing of hollow organ is
a. Lambert b. Simple continous
c. Overlapping d. Mattress

100. For making a teaser bull ligation of ..... is performed
a. Spermatic cord b. Vas deferens
c. Spermatic vein d. Spermatic artery

101. Obstructive urolithiasis is mainly a disease of
a. Uncastrated animal
b. Teaser animal
c. Castrated animal
d. All of the above

102. Hernial ring of diaphragm is closed by ..... suture pattern
a. Connell
b. Purse string
c. Lock stitch
d. Overlapping mattress

103. Castration in small ruminants by closed method is done by
a. Emasculator
b. Burdizzo
c. Clamp method
d. Rubber ring method

104. Dropped elbow condition is observed in
a. Crural paralysis
b. Radial nerve paralysis
c. Peroneal nerve paralysis
d. Volar nerve paralysis

105. Calculi of teat cistern is known as
a. Nephrolith
b. Lactolith
c. Cystolith
d. Enterolith

106. In bovines urethral calculi is mainly found in
a. Sigmoid flexure
b. Pre-scrotal region
c. Ischial region
d. Tip of the penis

107. A testicle found in the prepubic region will be known as

a. Monorchid
b. Cryptorchid
c. Ectopic testis
d. Hermaphordite

108. The catgut no. used for closure of rumenotomy incision is

a. 1
b. 2
c. 1-0
d. 2-0

109. Intra-articular injection is given at

a. Vein
b. Bursa
c. Joint capsule
d. Subarachnoid space

110. Diaphragmatic hernia is an example of

a. Internal hernia
b. Reducible hernia
c. External hernia
d. Strangulated hernia

111. In open method of castration in a bull, instrument used to cut and crush the spermatic cord is

a. Emasculator
b. Artery Forceps
c. Burdizzo
d. Vulsellum forcep

112. Medial patellar desmotomy is done for

a. Lateral fixation of patella
b. Upward fixation of patella
c. Medial fixation of patella
d. Downward fixation of patella

113. Cystorrhexis is rupture of

a. Rumen
b. Urinary bladder
c. Abomasum
d. Urethra

114. Ping test is used for the diagnosis of

a. Traumatic reticulitis
b. Abomasal displacement
c. Traumatic pericarditis
d. Omasal impaction

115. Omarthritis is an affection of

a. Stifle joint
b. Shoulder joint
c. Hip joint
d. Elbow joint

116. Abdominal part of the oesophagus is absent in

a. Canine
b. Bovine
c. Equine
d. Feline

117. Typhelectomy is the resection of

a. Colon
b. Ileum
c. Caecum
d. Rectum

118. DCP stands for

a. Di-Calcium Phosphate
b. Dynamic Calcium Plate
c. Dynamic Compression Plate
d. Dissolved Calcium Protein

119. Surgical removal of part of penis is called

a. Ovariectomy
b. Episiotomy
c. Peniectomy
d. Hysterectomy

120. For thoracocentesis, the appropriate site is

a. 5^{th} rib
b. 7^{th} rib
c. 8^{th} rib
d. 5^{th} to 7^{th}intercostal space

121. If the content is urinary bladder, then hernia is termed as

a. Enterocele
b. Vesicocele
c. Epiplocele
d. Hysterocele

122. Celiotomy is also known as

a. Laparotomy
b. Tracheotomy
c. Thoracotomy
d. Cystotomy

123. Sweeny is a condition with

a. Supra scapular nerve paralysis
b. Paralysis of pectoral nerve
c. Contraction of flexor tendon
d. Hygroma of carpus

124. Synonym of laminitis is

a. Thrush
b. Founder
c. Wind puff
d. Canker

125. Inflammation of joints is known as

a. Arthritis
b. Synovial hernia
c. Luxation
d. None of the above

126. Montigomery fracture occurs in

a. Radius-ulna b. Humerus
c. Femur d. Tibia-fibula

127. The fluid preferred for intravenous administration in bovine uremia is

a. Normal Saline
b. 20% Dextrose
c. 5% Dextrose
d. Dextrose - Saline

128. Before relieving of gastric dilatation and torsion in dogs, the antioxidant infused is

a. Deferoxamine b. Phenoxybenzamine
c. Doxapram d. Hydoxyzine

129. Best suture material for tendon surgery is

a. Nylon
b. Stainless Steel
c. Carbon fibre
d. None of the above

130. Chronic hypertrophy of frog of III phalange is called

a. Thrush b. Founder
c. Canker d. Wind puff

131. Surgical approach for diaphragmatic herniorraphy is

a. Trans thoracic
b. Trans abdominal
c. Both a and b
d. None of the above

132. Crural hernia is also known as

a. Femoral hernia b. Perineal hernia
c. Scrotal hernia d. Inguinal hernia

133. Collection of fluid between layers of tunica vaginalis is

a. Hydrocele b. Uterine cyst
c. Vaginal cyst d. Hydrovaginalis

134. Cornual nerve block is the ideal anaesthetic procedure in bovines for

a. Dehorning b. Trephining of sinus
c. Horn amputation d. Rhinotomy

135. Heat destroys micro-organism by the destruction of

a. Nucleic acids b. Fats
c. Proteins d. All of the above

136. Tumors which are well encapsulated are called

a. Benign b. Malignant
c. Keloid d. None of the above

137. Ketoprofen is a

a. Corticosteroid b. NSAID
c. Antibiotic d. Anti-emetic

138. A condition develops due to the unhygienic condition or muddy ground is known as

a. Canker b. Thrush
c. Founder d. Wind puff

139. Inflammation of the sensitive lamina is known as

a. Gonitis b. Arthritis
c. Laminitis d. Lameness

140. Absence of teat is known as

a. Amastia b. Athelia
c. Aphakia d. Anuria

141. The commonest site for lodgement of the calculi in goats is

a. Neck of the bladder
b. Sigmoid flexure
c. Ischial urethra
d. Urethral process

142. Reticular foreign bodies is removed by

a. Reticulotomy b. Rumenostomy
c. Rumenotomy d. Laparotomy

143. Deferred fracture occurs in

a. Carpal b. Phalanges
c. Tarsal d. All of the above

144. Uncontrolled seepage of milk through teat is known as

a. Soft Milker b. Easy Milker
c. Leaky teat d. Hard Milker

145.Soft palate is ballooned and injured in

a. Cow
b. Dog
c. Horse
d. Camel

146.Abnormal twisting of the neck is known as

a. Choke
b. Glossoplegia
c. Torticollis
d. Rhinoplegia

147.The dermoid cyst contains

a. Hair
b. Nail
c. Teeth
d. All of the above

148.Diverticulum of oesophagus is treated by

a. Manually
b. Surgically
c. Using probing
d. All of the above

149.Tumour of gum is also known as

a. Gingivitis
b. Gum sarcoma
c. Odontoma
d. Epulis

150.Quidding is the specific symptom of

a. Oral abscess
b. Sharp molars
c. Shear mouth
d. Dental fistula

151.Melting point of tungsten is

a. 3370°C
b. 2270°C
c. 3370°F
d. 2270°F

152.Site of anterior epidural block in bovines is

a. Lumbosacral space
b. First inter coccygeal space
c. Second inter coccygeal space
d. None of the above

153.Morphine is contraindicated in

a. Canines
b. Bovines
c. Felines
d. Caprines

154.In which stage anaesthetic regimen like dilated pupil, fisheye appearance and blanched mucous membrane is seen

a. Stage I
b. Stage II
c. Stage III
d. Stage IV

155.An example for ophthalmic local anaesthetic is

a. Lignocaine
b. Lidocaine
c. Bupivacaine
d. Paracaine

156.Atropine as pre anaesthetic

a. Reduces metabolic rate
b. Reduces salivary, gastric and bronchial secretions
c. Decreases intestinal motility
d. Reduces body temperature

157.To perform operation on lower lip region, the nerve block used is

a. Maxillary
b. Supraorbital
c. Infraorbital
d. Mental

158.Dose of thiopentone sodium i/v in dog is

a. 20 mg /kg b.wt.
b. 18 mg /kg b.wt.
c. 25 mg /kg b.wt.
d. 28 mg /kg b.wt.

159.Tranquilizers are also known as

a. Mydriatics
b. Analeptics
c. Neuroleptics
d. Ataractics

160.Innovar vet is a

a. Ananesthetic
b. Neuroleptanalgesia
c. Narcotic
d. Tranquilizer

161.Xylocaine is used as a

a. Alpha-2-agonist
b. Sedative
c. Narcotic
d. Local anaesthetic

162.Thiopental sodium is a

a. Long acting barbiturate
b. Short acting barbiturate
c. Intermediate acting barbiturate
d. Ultrashort acting barbiturate

163.Drug which reduces the salivary and bronchial secretion is

a. Hyosciene
b. Atropine
c. Acepromazine
d. Both a and b

164. Glucose effect is observed due to administration of

a. Barbiturate anaesthesia
b. Local anaesthesia
c. Injectable anaesthesia
d. Inhalentanaesthesia

165. Xylazine is a cardio-pulmonary

a. Stimulant b. Irritant
c. No effect d. Depressant

166. All stages of anaesthesia are seen in

a. Injectable anaesthesia
b. Dissociative anaesthesia
c. Local anaestheisia
d. Inhalent anaesthesia

167. Doxapram is a

a. Respiratory irritant
b. Respiratory anaesthetic
c. Respiratory stimulant
d. Respiratory depressant

168. Which of the following is a specific alpha-2-antagonist

a. Atipamezole
b. Yohimbin
c. 4-amino pyramidine
d. All of the above

169. Toxicity of local anaesthetics may be

a. Local b. Cerebral
c. Vascular d. All of the above

170. Which is a colourless, non-irritating gas

a. Ether b. Chloroform
c. Nitrous oxide d. All of the above

171. Immobilon LA is a combination of

a. Droperidol + Fentanyl citrate
b. Etorphine + Methotrimeprazine
c. Etorphine + Acepromazine
d. Acepromazine + Methadone

172. Sterilization of disposable syringes, needles, I.V sets etc. is done by

a. Isopropyl alcohol
b. Carbon dioxide
c. Ethylene Oxide
d. Chloro xylenol

173. Neuroleptanalgesia is a combination of

a. Tranquilizer + Sedative
b. Sedative + Narcotic
c. Tranquilizer + Barbiturate
d. Tranquilizer + Narcotic

174. Pudendal nerve block is done in

a. Para lumbar fossa
b. Ischio-rectal fossa
c. Sub lumbar region
d. Prepucial sheath

175. Nerve block used to perform operation on the lower lip region is

a. Mental b. Auriculopalpebral
c. Supra orbital d. Maxillary

176. Stage of delirium is also known as

a. Stage II of anaesthesia
b. Stage I of anaesthesia
c. Stage III of anaesthesia
d. Stage IV of anaesthesia

177. Passing of low voltage electric current through cerebrum is called as

a. Electroanaesthesia b. Electroanalgesia
c. Electronarcosis d. Electrostimulation

178. Atropine sulphate is a

a. Tranquilizer
b. Morphine derivative
c. Anticholinergic drug
d. None of the above

179. The chief action of morphine is

a. Muscle relaxation
b. Tranquilization
c. Analgesia
d. All of the above

180. Relief from the pain is known as

a. Analgesia b. Sedation
c. Anaesthesia d. All of the above

181. Site for administration of epidural anaesthesia in

a. Sacro-coccygeal space
b. 1st and 2nd intercoccygeal space
c. Lumbo-sacral space
d. All of the above

182. Which is a phenothiazine derivative

a. Acepromazine b. Chlorpromazine
c. Triflupromazine d. All of the above

183. Preferred site of epidural anaesthesia in cattle is

a. Sacro-coccygeal space
b. Lumbar-sacral space
c. 4th Inter-coccygeal space
d. 5th Inter-coccygeal space

184. Different types of field block are

a. T-Block
b. Inverted L-Block
c. L-Block
d. All of the above

185. Glycerylguaiacolate is a

a. Analgesic b. Muscle relaxant
c. Purgative d. Luxative

186. Site for intravenous anaesthesia in dogs

a. Cephalic b. Jugular
c. Saphenous d. Both a and c

187. Sterilium is used as a

a. Anaesthetic
b. Antiseptic
c. Analgesic
d. Anti-inflammatory

188. The anaesthesia which facilitates the examination of penis and prepuce

a. Paravertebral
b. Volar block
c. Pudendal
d. Epidural

189. Site for collection of CSF in dogs

a. Atlanto-occipital space
b. Sub lumbar puncture
c. Atlanto-axial space
d. Lumbo-sacral space

190. Atropine is obtained from

a. Atropa beladona
b. Atropa beladonium
c. Atropa niger
d. All of the above

191. Specific antidote of Morphine is

a. Atropine b. Naltrexone
c. Nalbuphine d. Nalorphine

192. Older, weak and debilitated animals require

a. More anaesthesia
b. No anaesthesia
c. Lesser anaesthesia
d. None of the above

193. The dose of anaesthetic in small animals as compared to large animals is

a. Low
b. None of the above
c. Same
d. High

194. Inhalent anaesthetics are eliminated from the body by

a. Exhalation b. Urine
c. Skin d. Faeces

195. Morphine is contraindicated in

a. Infants and elderly patients
b. Uraemic patients
c. Respiratory insufficiency
d. All of the above

196. Which of the following is a local anaesthetic

a. Centbutridine
b. Mepivacaine
c. Lignocaine
d. All of the above

197. M-99 is used for the anaesthesia of

a. Wild animals
b. Farm animals
c. Laboratory animals
d. Pet animals

198. Urethane is the anaesthetic agent which is used in

a. Laboratory animals b. Camels
c. Canines d. All of the above

199. Esophylactic effect occurs due to

a. X rays b. Infra red rays
c. Gamma rays d. UV rays

200. Ideal FFD for diagnostic radiography should be

a. 36 inch b. 36 cm
c. 100 cm d. 100 inch

201. Which X - ray machine requires three phase electricity

a. Portable X - ray machine
b. Mobile X - ray machine
c. Fixed X - ray machine
d. X - ray machine for therapy

202. IVP stands for

a. Contrast radiographic studies of urinary tract
b. Contrast radiographic studies of spinal cord
c. Contrast radiographic studies of gastrointestinal tract
d. None of the above

203. Telescoping of intestine is known as

a. Strangulation b. Volvulus
c. Tortion d. Intussuception

204. Ultrasonographic probe used for scanning of deeper tissues

a. 3.3 MHz b. 12 MHz
c. 7.5 MHz d. 18 MHz

205. Ultrasonographically, distended urinary bladder appears

a. Anechoic b. Hypoechoic
c. Hyperechoic d. Isoechoic

206. The minimum age (years) of the person involved in radiography work is

a. 18 Years b. 17 Years
c. 20 Years d. 21 Years

207. The difference of various densities of adjacent areas on a radiograph is

a. Contrast b. Density
c. Latitude d. Brightness

208. Radiographically, bone is

a. Radio opaque
b. Radio transparent
c. Radiolucent
d. None of the above

209. A radiograph of the renal pelvis and ureter is called

a. Myelogram b. Skiagram
c. Pyelogram d. Cystogram

210. In veterinary radiography, the focal film distance should always be

a. 60-70 cm b. 110-120 cm
c. 90-100 cm d. 140-150 cm

211. A dark radiographic film indicates

a. Over exposure
b. No exposure
c. Under exposure
d. None of the above

212. X-rays are high energy

a. Electron
b. Neutron
c. Proton
d. Electromagnetic radiations

213. The following acts as negative contrast media

a. Air b. Nitrous oxide
c. Carbon dioxide d. All of the above

214. Contrast radiography of channels of long bones is called as

a. Osteography
b. Osteomedullography
c. Arthrography
d. All of the above

215. X-ray film emulsion consists of gelatin and .....

a. Silver b. Silver nitrate
c. Silver halide d. Barium sulphate

216. The colour of safe light used in dark room

a. Red b. Blue
c. Green d. Yellow

217. Fixing agent in the X-ray fixer is

a. Ammonium sulphide
b. Formaline
c. Acetic acid
d. Ammonium thiosulphate

218. Ultrasonography is a

a. Invasive technique
b. Non invasive technique
c. Less invasive technique
d. Highly invasive technique

219. On ultrasonographical examination, cytoliths appear as

a. Anechoic
b. Hyperechoic
c. Hypoechoic
d. Isoechoic

220. Soft X-rays from the X-ray tube are filtered by using filters made up of

a. Lead
b. Calcium tungstate
c. Aluminium
d. Copper

221. Commonly used contrast medium for GI tract is

a. Air
b. Barium sulphate
c. Conray
d. Nitrous oxide

222. X-ray tube current is measured in

a. Volts
b. Mega Hertz
c. Electron volts
d. Ampere

223. To obtain a good quality radiograph, the essential requirements are

a. Correct exposure
b. Correct positioning
c. Correct processing
d. All of the above

224. Contrast agents used for MRI is

a. Gadolinium
b. Barium sulphate
c. Iodine compounds
d. All of the above

225. Different modes of Ultrasonography are

a. A-mode
b. M-mode
c. B-mode
d. All of the above

226. Low kVp produces

a. High contrast
b. No contrast
c. Low contrast
d. None of the above

227. Movable grids are also known as

a. Parallel Grids
b. Pseudo focused grids
c. Focused grids
d. Potter Bucky diaphragm

228. The most radiosensitive cells are

a. Germinal cells
b. Lymphoid cells
c. Haemopoietic cells
d. Brain cells

229. Twisting of bowel on its mesenteric axis is known as

a. Volvulus
b. Gut tie
c. Torsion
d. Intussusception

230. Replenisher replaces and maintains the concentration of exhausted

a. Developer
b. Fixer
c. Both a and b
d. None of the above

231. Reflecting layer of intensifying screen is made up of

a. Magnesium oxide
b. Titanium dioxide
c. Both a and b
d. None of the above

232. The technique used for lengthening of the tendon for correction of the contracted tendons is

a. Doubling over procedure
b. Z-tenotomy
c. Wedge section excision
d. All of the above

233. Severe pain along the course of a nerve is known as

a. Neuroleptanalgesia
b. Neuralgia
c. Twitching
d. None of the above

234. Lembert suturing pattern is not used for suturing of

a. Rumen
b. Oesophagus
c. Uterus
d. Urinary bladder

235. Tenosynovitis of the tarsal sheeth of deep

digital flexor tendon of hind limb is known as

a. Bog spavin b. Bone spavin
c. Thorough pin d. Tenovaginitis

236. In horses, rotation of the third phalanx is seen in

a. Quittor
b. Laminitis
c. Bog spavin
d. Wind puff

237. Which of the following is an example of non absorbable suture material

a. Catgut b. Vitafil
c. Nylon d. Both b and c

238. Bunnel-Mayer suture is used for the repair of

a. Tendons b. Intestine
c. Blood vessels d. Nerves

239. Size of catgut used for enterotomy in dogs is

a. 1 b. 2
c. 00 d. 0000

240. Gallamine is classified under

a. Depolarizing agent
b. Dual blocking agent
c. Miscellaneous
d. Non-depolarizing agent

241. Benign tumour of striated muscle is known as

a. Leiomyoma b. Chondroma
c. Synovial sarcoma d. Rhabdomyoma

242. Anaesthetic is deposited around the nerve trunk in

a. Spinal anaesthesia
b. Epidural anaesthesia
c. Nerve block
d. None of the above

243. Antagonist of xylazine is

a. Atropine b. Lavallorphine
c. Yohimbin d. Etorphine

244. Which is not a absorbable suture material

a. Collagen b. Polyglactin
c. Fascia lata d. Umbilical tape

245. Kangaroo tendon is obtained from

a. Intestine of Kangaroo
b. Muscle of Kangaroo
c. Tail of Kangaroo
d. Diaphragm of Kangaroo

246. Best prosthetic material for tendon surgery is

a. Carbon fibre b. SS wire
c. Nylon fibre d. None of the above

247. Suture material having anti-bacterial coating is

a. Vitafil b. Vicryl Plus
c. Vicryl d. Vicryl T

248. Tarsorraphy is the term used for the surgery of

a. Tarsal glands b. Eye lids
c. Tear glands d. Tarsal bones

249. In a paraplegic animal the epidural injection is given at

a. Sacro-coccygeal space
b. Foramen magna
c. Lumbo-sacral space
d. Thoraco-lumbar space

250. Hernial sac is absent in

a. Umbilical hernia
b. Ventral abdominal hernia
c. Diaphragmatic hernia
d. Scrotal hernia

251. Tenosynovitis of tarsal sheath is known as

a. Sesamoditis b. Bone spavin
c. Osselets d. Thoroughpin

252. Interlocking nailing is a method of

a. External fixation
b. Both of the above
c. Internal fixation
d. None of the above

253. Buttress foot is seen in

a. Pyramidal disease b. Ring bone disease
c. Ring bone d. Side bone

254. Regarding repair of tibial fracture, the correct statement is

a. Only normograde pinning is done
b. Only retrograde pinning is done
c. In paediatric dogs normograde is avoided
d. Both a and c

255. Regarding diaphragmatic hernia in buffaloes the correct statement is

a. Recurrent tympany is pathognomic
b. Right side musculotendeinous junction is most prone for herniation
c. Innate weakness of diaphragm
d. All of the above

256. Low grade corticosteroid used in ocular therapeutics is

a. Dexamethasone
b. Triamniciloneacetonide
c. Prednisolone
d. Fluromethalone

257. An open wound can be best managed during

a. First 6 hours of injury
b. First 12 hours of injury
c. First week of injury
d. First day of injury

258. The most common site for teat obstruction is

a. Lower one third
b. Upper one third
c. Middle one third
d. None of the above

259. Amputation of horn in goats is done by

a. Cornual nerve block
b. Infra orbital nerve block
c. Both a and b
d. None of the above

260. Bracheocephalic breed of dog is

a. Collie b. Dobermann
c. Pug d. German shepherd

261. Marsupialization is mainly done for

a. FBS
b. Urinary incontinence
c. Hernia
d. Pyometra

262. Abomasal displacement is common in cattle when feed rich in .....is fed

a. Roughage
b. Concentrate
c. Roughage and Concentrate both
d. None of the above

263. Omasal sounds can be auscultated at the level of right elbow at following intercostals space

a. 6 b. 7
c. 8 d. 9

264. The wound of rumenotomy should be closed with following suture patterns

a. Lambert's followed by cushing
b. Horizontal and vertical mattress
c. Simple continuous & lockstitch
d. Simple interrupted and horizontal mattress

265. The following is the example of the internal hernia

a. Ventral hernia
b. Inguinal hernia
c. Diaphragmatic hernia
d. Perineal hernia

266. Osselets is traumatic arthritis of

a. Stifle joint b. Fetlock joint
c. Hock joint d. Hip joint

267. Chronic purulent inflammation of collateral cartilage of the third phalanx is called

a. Ring bone b. Thrush
c. Canker d. Quittor

268. A foul smelling discharge ventral to anus with associated swelling in dog can be

a. Perineal hernia
b. Anal gland abscess
c. Volvulous
d. Torsion

269. The pastern axis should divide the following bones in equal parts

a. 1st and 2nd phalanx
b. 1st and 3rd phalanx
c. 2nd and 3rd phalanx
d. None of the above

270. Excessive haemorrhage may lead to

a. Hypovolaemic shock
b. Vasogenic shock
c. Neurogenic shock
d. Cardiogenic shock

271. Which wound is caused by flies

a. Insect bite
b. Ulcerative wound
c. Maggotized wound
d. Granulative wound

272. Surgical wounds heal by

a. First intention
b. Mixed intention
c. Scar formation
d. Second intention

273. The most susceptible species to malignant hyperthermia is

a. Equine b. Bovine
c. Canine d. Swine

274. Pointing, maturation and rupturing is seen in

a. Abscess b. Haematoma
c. Cyst d. Hernia

275. When complete loss of bone continuity occur then it is known as

a. Compound fracture
b. Complete fracture
c. Incomplete fracture
d. Simple fracture

276. A blind purulent tract showing no tendency to heal is known as

a. Fistula
b. Gangrene
c. Sinus
d. Ulcer

277. Agents used for cryosurgery is

a. Liquid nitrogen (LN_2)
b. Dry ice (CO_2)
c. N_2O
d. All of the above

278. Injury to the tissue caused by excessive cold is known as

a. Scald b. Burn
c. Necrosis d. Frost bite

279. Fistulous wither is also known as

a. Supraspinous bursitis
b. Infraspinous bursitis
c. Subspinous bursitis
d. Olecrenon bursitis

280. Separation of horny covering of the horn core due to injury is known as

a. Fracture b. Avulsion
c. Dislocation d. Horn cancer

281. The dart rifle is fairly accurate for the target up to

a. 80 mtrs. b. 50 mtrs.
c. 80 feet d. 40 feet

282. Anti-inflammatory drug found to be nephrotoxic in vultures is

a. Meloxicam b. Ketoprofen
c. Diclofenac d. Paracoxib

283. Innovar vet is a combination of

a. Droperidol – Fentanyl citrate
b. Xylazine – Ketamone
c. Etorphine – Acepromazine
d. Acepromazine – Xylazine

284. Dose of Telazol in lion is

a. 1.1 mg/kg b. 2.2 mg/kg
c. 3.3mg/kg d. 5 mg/kg

285. Routinely, surgical instruments are autoclaved at

a. 170 °C for 40 min at 15 lbs pressure
b. 120 °C for 8 min at 15 lbs pressure
c. 121 °C for 30 min at 15 lbs pressure
d. 140 °C for 60 min at 15 lbs pressure

286. Chloral hydrate is a

a. Tranquilizer b. Narcotic
c. Sedative d. Anaesthetic

287. Niketharnide is used in

a. Severe hemorrhage
b. Respiratory failure
c. Cardiac failure
d. Toxaemia

288. Tenets of Halsted are related to

a. Wound healing
b. Shock therapy
c. Principles of surgery
d. Anaesthetic surgery

289. Drainage of cyst shows

a. Purulent discharge
b. Blood mixed
c. Jelly like fluid
d. Dark grayish fluid

290. Green stick fracture is common in

a. Ricketic animals b. Young animals
c. Old animals d. Adult animals

291. The target organ of shock in dogs is

a. Heart b. Lungs
c. Liver d. Intestine

292. Connnel suturing pattern is used for suturing of

a. Intestine b. Skin
c. Muscle d. Uterus

293. For catheterization in a bull ..... block preffered is

a. Epidural b. Pudendal
c. Paravertebral d. Cornual

294. Paralysis of hind quarter is

a. Hemiplegia b. Paraplegia
c. Diplegia d. Quadriplegia

295. Most common type of shock in veterinary practice is

a. Haemorrhagic b. Cardiogenic
c. Septic d. Neurogenic

296. An example of retension/honey cyst is

a. Ranula b. Hydrocele
c. Dentigerous cyst d. Sarcocyst

297. Grid in radiography is used

a. To absorb primary X-rays
b. For thin body parts
c. To absorb secondary X-rays
d. For collimation

298. Pus in the anterior chamber of the eye is known as

a. Chemosis b. Hyphema
c. Staphyloma d. Hypopyon

299. Disbudding of the calf is done at the age

a. 1 day b. 1 month
c. 1 year d. 1 week

300. Air is useful contrast medium for

a. Cystography
b. Hysterography
c. Myelography
d. Angiography

301. The contrast media used in gastrography is

a. Conray - 210 b. Barium sulphate
c. Air d. Iohexol

302. Persistent grayish mucoid discharge is classic sign of

a. Catarrhal conjunctivitis
b. Purulent conjunctivitis
c. Follicular conjunctivitis
d. Degenerative conjuctivitis

303. A radiograph or renal pelvis and ureter is called as

a. Myelogram b. Pyelogram
c. Skiagram d. Diagram

304. A method of heating tissue in depth by passing high frequency electric current

a. Diathermy
b. Thermocautery
c. Fomentation
d. Ultrasonic Therapy

305. Hydrotherapy is used in the treatment of
a. Acute inflammation
b. Sub acute inflammation
c. Chronic inflammation
d. None of the above

306. An abnormal retraction of the eyeball in to the orbit
a. Ptosis
b. Exophthalamos
c. Enophthalamos
d. Sty

307. The "Blackness" in the radiograph is defined as
a. Radiographic density
b. Radiographic contrast
c. Scale of contract
d. Radiographic detail

308. Inflammatory thickening of mucus membrane of the hard palate behind upper incisor is called
a. Dental caries
b. Claft palate
c. Hare lip
d. Lampas

309. Zepp's operation is performed in case of
a. Chronic conjunctivitis
b. Chronic otorrhoea
c. Chronic keratitis
d. Otitis externa

310. Massage helps in healing by
a. Increasing blood supply
b. Decreasing blood supply
c. Increased cytokine production
d. None of the above

311. Congenital absence of the lens is known as
a. Aphakia b. Amaurosis
c. Glaucoma d. Ptosis

312. The condition megaoesophagus can be
a. Idiopathic
b. Acquired
c. Congenital
d. All of the above

313. Regarding othematoma, the correct statement is
a. Common in dogs with pendulous ear
b. Common in dogs having otitis externa
c. Can be autoimmune in origin
d. All of the above

314. Type of lameness noticed when the foot is kept on the ground
a. Swinging leg lameness
b. Complimentary lameness
c. Mixed lameness
d. Supporting leg lameness

315. Pectineus tenotomy is indicated in
a. Patellar luxation b. Hip dysplasia
c. Hip dislocation d. Disc prolapsed

316. Upward curvature of the vertebral column is called as
a. Torticollis b. Kyphosis
c. Spondylosis d. Scoliosis

317. Urinary incontinence may be a complication of
a. Urethrotomy b. Nephrotomy
c. Cystotomy d. Ovariohysterectomy

318. Amputation of penis in bull is called
a. Peotomy b. Tenotomy
c. Osteotomy d. Myotomy

319. Castration does not involve incision of scrotal skin in
a. Horse b. Dog
c. Cat d. Pig

320. Exostosis in hock region below the level of the tibiiotarsal articulation is called
a. Spavin b. Side bone
c. Ring bone d. Splints

321. Fracture of _____ doesn't give crepitation sound
a. Os calsis b. Femur
c. Tibia d. None of the above

322. Removal of both ovaries and uterus is called

a. Spaying b. Hysterectomy
c. Pan-hysterectomy d. All of the above

323. Approach to caecum is done through

a. Left paralumbar b. Right paralumbar
c. Paramidian d. Grid

324. In case of gastric dilatation on plain radiographs the gastric shadow occupies following % of abdomen

a. 10-20% b. 20-30%
c. 30-40% d. 40-50%

325. Simple intussusceptions comprises of how many intestinal layers

a. 1 b. 2
c. 3 d. 4

326. Pus in the pleural space is known as

a. Pneumothorax b. Haemothorax
c. Pyothorax d. Hydrothorax

327. Incision over the dorsal commisure of vulva is known as

a. Ovariectomy b. Episiotomy
c. Hysterectomy d. Penictomy

328. Water belly condition appears in which of the following

a. Obstructive urolithiasis
b. Rupture of urethra
c. Traumatic peritonitis
d. Pervious urachus

329. Upward fixation of patella is surgically treated by

a. Lateral patellar desmotomy
b. Medial patellar desmotomy
c. Middle patellar desmotomy
d. All of the above

330. Reducible swelling lateral to anus is suggestive of

a. Perineal hernia
b. Anal gland tumour
c. Cyst
d. Hematoma

331. In diaphragmatic hernia, commonly herniated part is

a. Abomasum b. Reticulum
c. Omasum d. Intestine

332. Preanaesthetic agent which serves as a basis for general anaeshtesia is called

a. Basal anaesthesia
b. Balanced anaesthesia
c. Surgical anaesthesia
d. Pre anaesthesia

333. Among the local anaesthetic, the drugs which causes vasoconstriction is

a. Cocaine b. Lignocaine
c. Bupivacaine d. Procaine

334. Utrecht method of operation is done for

a. Recurrent rectal prolapsed
b. Abomasal displacement
c. Diaphragmatic hernia
d. Vaginal prolapsed

335. Rupture of bladder is called

a. Cystorrhaphy b. Cystorrehexis
c. Cystostomy d. Cystotomy

336. One wound one scar theory is indicated for .....

a. Bone healing
b. Ligament healing
c. Tendon healing
d. Nerve healing

337. Z-tenotomy surgery is done for lengthening of .....

a. Bone
b. Tendon
c. Ligament
d. Nerve

338. The process by which the bone is formed in a cartilaginous environment is called

a. Intramembraneous ossification
b. Endochondral ossification
c. Hyperplastic ossification
d. Both a and b

339. Montegia fracture is specifically denoted the fracture of
a. Radius
b. Olecranon process
c. Tuber calcis
d. Fracture of femur head

340. Healing by granulation tissue is called
a. 1st intention healing
b. 2nd intention healing
c. Mixed intention healing
d. 3rd intention healing

341. Fracture of distal end of radius is called .....
a. Montegia fracture
b. Colle's fracture
c. Supracondylar fracture
d. None of the above

342. Wound healing with excessive granulation tissue is called
a. Proud flesh
b. Ulcerated wound
c. Granulating wound
d. Both a and c

343. Normal angulation of neck of femur with its shaft is modified giving straight line appearance and causes hip dysplasia in a condition called
a. Coxa magna
b. Coxa valga
c. Coxa vara
d. Coxa plana

344. Necrosis of the lateral cartilage and characterized by the presence of sinus opening in the coronet region is called
a. Ring bone
b. Quittor
c. Navicular disease
d. None of the above

345. Involuntary overflexion and lifting of a limb during progression is called
a. Stringhalt
b. Racing joint
c. Spavin
d. Cur

346. Marsupialisation is advocated for the treatment of
a. Pyometra
b. Urolithiasis
c. Intestinal obstruction
d. Intussusceptions

347. When the bladder passed through the urethra in mare the condition is called
a. Prolapse of bladder
b. Eversion of bladder
c. Urethral prolapse
d. Urethral rupture

348. Modified white house technique is done for
a. Roaring
b. Entropion
c. Guttural pouch
d. Ectropion

349. Modified morgan technique is done for which condition
a. Hordeolum
b. Proptosis
c. Cherry eye
d. Glaucoma

350. Term emmetropia is used for
a. Normal sight
b. Far sight
c. Short sight
d. Complete blindness

351. Drawer sign is noticed in
a. Patellar ligament rupture
b. Suspensory ligament rupture
c. Cruciate ligament rupture
d. None of the above

352. Scattered radiation is a major radiation hazard especially during fluoroscopic examinations because of
a. Photo electric effect
b. Compton effect
c. Pair production
d. Photo disintegration

353. Radiation intensity on the cathode side of the X-ray beam is higher than the anode side it is called
a. Attenuation
b. Half value layer
c. Heel effect
d. Pneumbra

354. Degree of sharpness or definition of an object on a radiograph is called
a. Radiographic quality
b. Detail
c. Radiographic density
d. Radiographic mottle

355. In which form of X-ray selenium is used as a photo conductor
a. Xero radiography
b. MRI
c. CT scan
d. Scintigraphy

356. Detailed soft tissue can be seen in which diagnostic method
a. MRI
b. CT scan
c. Xero radiography
d. Substraction technique

357. Contrast radiography of spinal cord is called
a. Myelography
b. Intraosseous vertebral venography
c. Dacrocystorhinography
d. None of the above

358. Surgical anaesthesia is achieved under which stage
a. Stage 1 b. Stage 2
c. Stage 3 plane 2 d. Stage 3 plane 3

359. Most commonly used anaesthesia for fish is
a. Tricaine methane sulphate
b. Urethane
c. Ether
d. Propoxate (R7464)

360. Plication of intestine in dog is a treatment for
a. Volvulus b. Torsion
c. Intussusception d. Hernia

361. Method of external immobilization is
a. Splint
b. Cast
c. Modified Thomas splint
d. All of the above

362. Castration in small ruminants is done by
a. Burdizzo method
b. Emusculator
c. Clamp
d. Rubber ring method

363. The most outstanding clinical sing of pyloric stenosis in dogs is
a. Persistent vomiting
b. Continuous diarrhea
c. Inappetance
d. None of the above

364. Meloxicam is a
a. Antiseptic b. Coagulant
c. NSAID d. Anaesthetic

365. Proud flesh is commonly seen in
a. Dogs b. Horses
c. Cat d. Cattle

366. The extent of burn can be analysed by the rule of
a. Eight b. Ten
c. Eleven d. Nine

367. Dehydration in a patient can be assessed by
a. Increased PCV
b. Increased TLC
c. Decreased TLC
d. Decreased PCV

368. Blind purulent tract showing no tendency to heal
a. Fistula b. Ulcer
c. Sinus d. Fistulus wither

369. Detoxification of non-inhalent anaesthetics takes place in
a. Blood b. All of the above
c. Kidney d. Liver

370. Hoflund's syndrome is also known as
a. TRP
b. Intussusception
c. Caecal torsion
d. Vagal indigestion

371. Radiation dose is calculated by

a. Chest Badges
b. Timer clock
c. Dental cones
d. All of the above

372. While processing of x-ray film, continuous agitation ..... fixing time

a. Increases b. Reduces
c. Does not affect d. All of the above

373. Fluoroscopic screen emits ..... colour

a. Yellowish green b. Yellow
c. Greenish blue d. Green

374. Cholecystography is the contrast radiographic study of

a. Urinary Bladder
b. Gall Bladder
c. Renal pelvis
d. All of the above

375. Radiographically, air filled distended intestinal loop appears as

a. Black b. Grey
c. White d. All the above

376. Most common congenital anomaly of penis is

a. Ectopic testis
b. Monorchidisim
c. Spiral deviation of penis
d. Persistent frenulum

377. Death in extensive burn is due to

a. Hemorrhage
b. Neurogenic shock
c. Respiratory failure
d. Haemoconcentration

378. The tract which communicate with body cavities is called

a. Fistula b. Sinus
c. Deep wound d. Ulcer

379. The following is ingredient of blister

a. $MgSO_4$ b. $CuSO_4$
c. I_2 d. Bin Iodide of Hg

380. Primary method of castration is used in

a. Bovine b. Equine
c. Caprine d. Canine

381. Which of the following is an emergency surgery

a. Ovario-hysterectomy
b. Caesarian section
c. Ear cropping
d. Castration

382. Which type of wound is caused by long pointed object

a. Punctured wound
b. Penetrating wound
c. Avulsion wound
d. Lacerated wound

383. Following blood picture will be seen in case of traumatic reticulitis

a. Lymphocytosis
b. Monocytosis
c. Neutrophilia
d. None of the above

384. Intestinal incision can be sutured with one of the following pattern

a. Vertical mattress
b. Purse string
c. Lambert
d. Overlapping mattress

385. Chemical sterilization is done with

a. Tinc. Benzoin
b. 70% Isopropyl alcohol
c. Silver nitrate
d. Ultrashort acting barbiturate

386. Hollow cavity containing fluid or semi-fluid material is known as

a. Haematoma b. Hernia
c. Cyst d. Abscess

387. The holes of the surgical drum while autoclaving should be kept

a. Closed
b. Open
c. Sealed with cotton
d. All of the above

388. Effect of atropine sulphate on eye is
a. Constriction of pupil
b. Dilatation of pupil
c. No effect
d. Both a and b

389. The catgut is prepared from
a. Rabbit b. Sheep
c. Pig d. Cat

390. Paralysis of left recurrent laryngeal nerve may lead to
a. Laryngeal hemiplegia
b. Laryngeal prolapse
c. Laryngeal weakness
d. All of the above

391. For removal of foreign body from the pericardial sac in cattle, approach is made through
a. Resection of 5th rib
b. 6th intercostals space
c. 4th intercostals space
d. 8th intercostals space

392. In pervious urachus the animal passes urine through
a. Umbilicus b. Prepuce
c. Vulva d. Anus

393. Perineal hernia is usually met with in
a. Castrated old dogs
b. Intact young dogs
c. Intact old male dogs
d. Adult female dogs

394. Devita's method is one of the treatment recommended for
a. Hip dysplasia
b. Fracture of femur head
c. Hip dislocation
d. Fracture of pelvis

395. Fracture healing occurs earlier in
a. Transverse fracture
b. Oblique fracture
c. Spiral fracture
d. Multiple fracture

396. Dropped sole is a symptom seen in
a. Chronic navicular disease
b. Acute laminitis
c. Chronic laminitis
d. Quittor

397. The 'U' shape foot is changed to 'V' shape in
a. Ring bone
b. Bobba bone
c. Pyramidal disease
d. Navicular disease

398. For sub luxation of patella in cattle, desmotomy of the ligament is done on
a. Middle straight ligament
b. Medial straight ligament
c. Lateral straight ligament
d. Cruciate ligament

399. Suture needles with longitudinal grooves are called
a. Grooved needles
b. Corrugated needles
c. Ribbed needles
d. Swaged needles

400. Father of veterinary radiology is
a. Roentgen b. Eberlein
c. Kirschner d. Slater

401. Surgical anaesthesia produced by combining two or more drugs or anaesthetic techniques is called
a. Basal anaesthesia
b. Balanced anaesthesia
c. Combination anaesthesia
d. General anaesthesia

402. An example of a dissociative anaesthetic is
a. Xylazine b. Tiletamine
c. Propofol d. Pentabarbitone

403. Magda method is otherwise known as
a. Proximal paravertebral nerve block
b. Farquharson's method
c. Hall method
d. Distal paravertebral nerve block

404. Antidote for xylazine is

a. Atropine b. Doxapram
c. Coramine d. Yohimbine

405. Example of an intrapelvic hernia is

a. Perineal hernia
b. Ventral hernia
c. Inguinal hernia
d. Gut tie

406. A type of fracture in which part of a bone fragment gets pulled away from the parent bone due to contraction of an associated tendon is

a. Complicated fracture
b. Compound fracture
c. Avulsion fracture
d. Comminuted fracture

407. A type of fracture in which a bone is divided into three or more fragments and the fracture lines meet is called

a. Compound fracture
b. Multiple fracture
c. Fissured fracture
d. Comminuted fracture

408. Catgut is prepared from which layer of intestine

a. Mucosa b. Submucosa
c. Muscular layer d. Serosa

409. Healing by granulation is

a. Ist intention b. IInd intention
c. IIIrd intention d. IVth intention

410. Topical agent of choice in burn injuries is

a. Silver sulfadiazine
b. Silver sulfasalazine
c. Povidine iodine
d. Mupirocin

411. Oscheocele is a hernia seen at

a. Inguinal region
b. Scrotal sac
c. Crural canal
d. Perineal region

412. Computed tomography uses

a. Magnetic waves
b. Digital radiation
c. X-rays
d. Radio waves

413. The energy level of X-rays is

a. 25-125 keV
b. 125-225 keV
c. 2.5 to 12.5 keV
d. 0.25-1.25 keV

414. The recommended FFD in veterinary radiography is

a. 90-100 cm b. 9-10 cm
c. 0 cm d. 90-100 m

415. Grid is used when the thickness of the part is more than

a. 1 cm b. 10 cm
c. 50 cm d. 100 cm

416. Anterior synchia is adhesion of cornea with

a. Palpebral conjunctiva
b. Bulbar conjunctiva
c. Iris
d. Sclera

417. Bulla osteotomy is done for the treatment of

a. Otitis interna
b. Chronic otitis externa
c. Otitis media
d. Othaematoma

418. Ear canalography is performed for assessing the integrity of

a. Ear ossicles b. Tympanum
c. Semicircular canal d. Chochlea

419. Prolapse of iris through corneal ulcer is called

a. Keratocele b. Hypopyon
c. Anterior syncchia d. Staphyloma

420. In haematoma the swelling is usually seen on

a. Concave side b. Convex side
c. Both sides d. None of above

421. Vertical ear canal ablation is a method of treatment of

a. Otitis externa b. Otitis media
c. Otitis interna d. Autism

422. Salivary mucocele is otherwise known as

a. Salivoma b. Ranula
c. Pannus d. Antibioma

423. Difference in intensity across the X-ray beam is called

a. Kneil effect b. Knee effect
c. Heel effect d. Keel effect

424. V-Y plasty is used for

a. Entropion b. Ectropion
c. Symblepharon d. Ankyloblepharon

425. Inflammation of the vascular tunic of eye is called

a. Keratitis b. Hyalitis
c. Gonitis d. Uveitis

426. Fixing of an abdominal organ to the abdominal wall is called

a. Abdominocentesis b. Celiotomy
c. Ventropexy d. Canthotomy

427. Localized peritonitis is characteristic of

a. Man b. Dog
c. Horse d. Cow

428. In Cakala method the spinal nerves desensitized are

a. T13, L1 & L2
b. L1, L2 & L3
c. L2, L3 & L4
d. L1, L2 & L4

429. In cows caesarean section is generally performed by incising

a. Ventral midline
b. Right flank
c. Left flank
d. Perineal

430. "Double Bubble" is a characteristic radiographic appearance in

a. GDV
b. Intussusception
c. Gastric foreign body
d. Intestinal foreign body

431. The most common type of hip dislocation in dogs is

a. Cranio-dorsal b. Caudo-dorsal
c. Cranio-ventral d. Obturator

432. The part of intestine that goes into an intussscepted segment is called

a. Intussusceptum
b. Intussuscepiens
c. Enterolith
d. Intussuscepticum

433. Sling used for treatment of hip dislocation in dogs is

a. Schroeder b. Velpeau
c. Thomas d. Ehmer

434. Hernial content in epiplocele is

a. Intestine b. Omentum
c. Epiglottis d. Mesovarium

435. Surgery performed for correction of deformities

a. Radical surgery
b. Reconstructive surgery
c. Elective surgery
d. Plastic surgery

436. The most efficient procedure for sterilization of surgical materials

a. Boiling in water
b. Autoclaving
c. Hot air oven
d. Irradiation

437. Haemorrhage from the eye can be controlled by instilling

a. Tincture Benzoin
b. Vitamin K
c. Adrenaline
d. Local anaesthestic

438. A lotion used for irrigation of the eye in conjunctivitis
a. Cetrimide
b. Phenol
c. Boric acid
d. Perchloride of mercury

439. Paradoxical respiration is seen in
a. Thoracotomy wound
b. Pneumonia
c. Pericardial effusion
d. Diaphragmatic hernia

440. Vitamine C is essential in wound healing as it favour
a. Collagen formation
b. Fibroblast proliferation
c. Contraction of fibroblast
d. Maturation of collagen

441. Round bodied needle with tapering point is used to suture
a. Skin b. Fascia
c. Tendon d. Intestine

442. Haemorrhagic shock is managed by administration of
a. Whole blood b. Plasma
c. Dextrose d. Normal saline

443. Ideal fluid for replacement in Hypovolemic shock is
a. Plasma
b. Dextrose saline
c. Whole blood
d. Polyionic isotonic solution

444. An intra muscular general anaesthetic agent for cat is
a. Diazepam b. Xylazine
c. Ketamine d. Siquil

445. The preanaesthetic dose of xylazine in dog is
a. 0.05-0.1 mg/kg body weight
b. 6-8 mg/kg body weight
c. 1-2 mg/kg body weight
d. 5-10 mg/kg body weight

446. Nylon suture is closed as
a. Surgeon's knot b. Granny knot
c. Tripple knot d. Square kno

447. A quality radiograph should possess
a. Good density
b. Proper thickness
c. Long scale of contrast
d. Short scale of contrast

448. An ionic contrast medium used for cystography is
a. Hypaque b. Omnipaque
c. Amipaque d. Biligraphins

449. Zepp's operation is indicated as surgical treatment for
a. Otitis interna
b. Chronic otitis externa
c. Otitis media
d. Othaematoma

450. Flail chest is condition due to
a. Fracture of more than one rib
b. Fracture of rib in both sides
c. Simple fracture of adjacent ribs
d. Fracture of adjacent ribs in more than one place

451. In suturing of wounds in urinary bladder, the suture pattern used is
a. Cushing b. Mattress
c. Crushing suture d. Simple continuous

452. In first intention healing of wound in cattle, the skin sutures are removed on
a. 7th day b. 10th day
c. 12th day d. 20th day

453. Maturation of abscess is favoured by the use of
a. Tr. Iodine
b. Tr. Benzoin
c. Iodine ointment
d. Magsulph-glycerine paste

454. Shock develops when the loss of blood is above
a. 25% b. 15%
c. 5% d. 10%

455. Site of epidural injection in goat is

a. Lumbosacral space
b. Sacro coccygeal space
c. 1st intercoccygeal
d. Between 1st two lumbar vertebrae

456. For oesophagraphy, for suspected case of stricture, barium is used as

a. Thick paste
b. Liquid
c. Thick suspension
d. None of these

457. Collagen suture is prepared from

a. Bovine steer flexor tendon
b. Extensor tendon
c. Both
d. None

458. A tranquilizer having muscle relaxation effect is

a. Glycopyrrolate b. Butorphanol
c. Succinyl choline d. Diazepam

459. The principle of ultrasound scanning is

a. Refraction
b. Diffraction
c. Polarization
d. Pulse- echo principle

460. Ground glass appearance of radiograph seen in

a. Fracture
b. Dislocation
c. Pneumonia
d. Ascites

Answer Sheet

1. c	2. b	3. b	4. c	5. a	6. a	7. c	8. a	9. b	10. c
11. d	12. a	13. c	14. b	15. a	16. b	17. d	18. b	19. a	20. d
21. b	22. c	23. a	24. b	25. b	26. b	27. c	28. b	29. c	30. a
31. a	32. a	33. d	34. a	35. b	36. b	37. c	38. a	39. b	40. c
41. a	42. b	43. b	44. a	45. c	46. c	47. b	48. d	49. d	50. c
51. b	52. b	53. c	54. a	55. b	56. a	57. b	58. c	59. c	60. c
61. c	62. d	63. c	64. a	65. d	66. b	67. a	68. d	69. b	70. b
71. b	72. c	73. b	74. a	75. a	76. a	77. a	78. b	79. b	80. d
81. b	82. c	83. c	84. a	85. d	86. d	87. c	88. b	89. a	90. b
91. a	92. a	93. b	94. b	95. c	96. d	97. a	98. a	99. a	100. b
101. c	102. c	103. b	104. b	105. b	106. a	107. c	108. b	109. c	110. a
111. a	112. b	113. b	114. b	115. b	116. b	117. c	118. c	119. c	120. d
121. b	122. a	123. a	124. b	125. a	126. a	127. a	128. a	129. c	130. c
131. c	132. a	133. a	134. c	135. c	136. a	137. b	138. b	139. c	140. b
141. d	142. c	143. b	144. c	145. d	146. c	147. a	148. d	149. d	150. b
151. a	152. b	153. c	154. d	155. d	156. b	157. d	158. c	159. d	160. b
161. d	162. d	163. d	164. a	165. d	166. d	167. c	168. a	169. d	170. c
171. c	172. c	173. d	174. b	175. a	176. a	177. c	178. c	179. c	180. a
181. c	182. d	183. a	184. d	185. b	186. d	187. b	188. c	189. a	190. a
191. d	192. c	193. d	194. a	195. d	196. d	197. a	198. a	199. d	200. a
201. c	202. a	203. d	204. a	205. a	206. a	207. a	208. a	209. c	210. c
211. a	212. d	213. d	214. b	215. c	216. a	217. d	218. b	219. b	220. c
221. b	222. d	223. d	224. a	225. d	226. a	227. d	228. b	229. a	230. c
231. c	232. b	233. b	234. b	235. d	236. b	237. d	238. a	239. c	240. d
241. d	242. c	243. c	244. d	245. c	246. a	247. b	248. b	249. c	250. c
251. d	252. c	253. a	254. d	255. d	256. d	257. a	258. a	259. c	260. c
261. d	262. b	263. d	264. a	265. c	266. b	267. d	268. b	269. a	270. a
271. c	272. a	273. d	274. a	275. b	276. c	277. a	278. d	279. a	280. b
281. b	282. c	283. a	284. b	285. c	286. c	287. b	288. c	289. c	290. b
291. d	292. a	293. b	294. b	295. a	296. a	297. c	298. d	299. d	300. a
301. b	302. a	303. b	304. a	305. a	306. c	307. d	308. d	309. b	310. a
311. a	312. d	313. a	314. d	315. b	316. b	317. c	318. a	319. b	320. a

321. d	322. c	323. b	324. d	325. d	326. c	327. b	328. b	329. b	330. a
331. b	332. a	333. a	334. b	335. b	336. c	337. b	338. b	339. a	340. b
341. b	342. d	343. b	344. b	345. a	346. a	347. b	348. c	349. c	350. a
351. c	352. b	353. c	354. b	355. a	356. a	357. a	358. c	359. a	360. c
361. d	362. a	363. a	364. c	365. b	366. d	367. a	368. c	369. d	370. d
371. a	372. c	373. a	374. b	375. a	376. d	377. d	378. a	379. d	380. b
381. b	382. b	383. c	384. c	385. b	386. c	387. b	388. b	389. b	390. a
391. a	392. a	393. c	394. c	395. b	396. c	397. c	398. b	399. c	400. b
401. b	402. b	403. d	404. d	405. d	406. c	407. d	408. b	409. b	410. a
411. b	412. c	413. a	414. a	415. b	416. c	417. c	418. b	419. d	420. a
421. a	422. b	423. c	424. b	425. d	426. c	427. d	428. a	429. c	430. a
431. a	432. a	433. d	434. b	435. b	436. b	437. c	438. c	439. a	440. d
441. d	442. a	443. d	444. c	445. c	446. c	447. c	448. a	449. b	450. d
451. a	452. b	453. c	454. a	455. a	456. a	457. a	458. d	459. d	460. d

Unit - 9

Veterinary Medicine and Epidemiology

Specific Posture and Gaits

Goose stepping gait in pigs	Deficiency of Pantothenic acid
Dog sitting posture in horses	Acute gastric dilatation
Squatting posture (male dog urinating like a bitch)	Cystitis and Urolithiosis
Saw horse posture	Colic
Praying posture (Hunching posture)	Acute Pancreatitis
High stepping gait with rigidity of limbs	Tetany
Knuckling of fetlock	Neuritis and nerve paralysis
Abducted elbow with extension of head and neck	Traumatic reticulopericarditis (Hardware disease)

Normal pH of body fluids

Abomasum	2-4
Rumen	6.2-7.2 (6.8)
Rumen (acid indigestion)	4-5
Rumen (protein putrefaction/alkaline indigestion)	8-10
Blood	7.4
Saliva	7.4
Urine	Alkaline in - Herbivores Acidic in - Carnivores

CSF	7.35-7.4

Sites for recording of pulse

Cattle	Coccygeal artery, Maxillary artery and Facial artery
Calf	Femoral artery
Horse	External maxillary artery, Facial artery and Median artery
Sheep and goat	Femoral artery
Dog and cat	Femoral artery
Pigs	Ventral Coccygeal artery

Respiratory rate

Cattle	10-30/min
Sheep	10-20/min
Horse	8-16/min
Goat	25-35/min
Dog	20-34/min (24/min)
Pigs	10-20/min

Respiratory sounds (Stridors)

Coughing	Due to irritation of the pharynx, trachea and bronchi
Sneezing	Due to nasal irritation
Wheezing	Due to stenosis of the nasal passages
Snoring	Due to pharyngeal obstruction (Ex: Tuberculosis)
Roaring	Due to paralysis of the vocal cords (Left Recurrent Laryngeal Nerve)
Grunting	Due to forced expiration when glottis is closed

Types of respiration

Biot's respiration	Alternating periods of apnoea and hyperpnoea Ex: Meningitis of medullary region
Cheyne Stroke respiration	Gradual increase followed by a gradual decrease in the depth of respiration Ex: advanced renal and cardiac disease

Periodic breathing	Periods of apnea followed by short bursts of hyperpnoea Ex: Electrolyte and acid-base imbalances
Kussmaul's respiration or air hunger	Forceful and regular inspiration with normal expiration Ex: Uremia and diabetic ketoacidosis)
Costal (Thoracic)	Dog and cat
Abdominal	Cattle, Buffalo, sheep and goat
Costo-abdominal	Horse, Donkey, Ass
Eupnoea	Normal quiet breathing with usual respiratory rate
Hyperpnoea	Increased rate of respiration with an increased or decreased depth of respiration
Polypnoea	Increased rate of respiration with decrease in depth
Oligopnoea	Decreased rate of respiration
Apnoea	Complete cessation of breathing
Dyspnoea	Laboured or Difficult breathing
Heaves	Chronic pulmonary obstructive disease in horses characterized by double expiration

Site of blood collection

Cattle	Jugular vein, Ear vein
Horse	Jugular vein
Sheep and goat	Jugular vein
Dog	Recurrent tarsal vein and cephalic vein
Pigs	Anterior vena cava, Ear vein
Poultry	Wing vein
Rabbit	Ear vein
Rat and mice	Retroorbital sinus and tail vein
Guinea Pig	Ear vein, Saphenous vein, Anterior vena cava

Site of CSF collection

Cattle	Lumbo sacral or 1st- 2nd coccygeal region
Horse	Sub occipital or lumbo-sacral region
Sheep and goat	Suboccipital or lumbo-sacral region

Dog	Cisternal puncture (Cisterna magna)
Pigs	Atlanto-occipital joint

Acts and their year of enforcement

Acts	Year of enforcement
Livestock importation act	1898 modified in 1952
The Glanders and Farcy act	1899
The Dourine act	1910 modified in 1957
The poisoning act	1919 modified in 1952
Dangerous drugs act	1930
Drugs and cosmetics act	1940
Drugs and cosmetics rules	1945
Prevention of cruelty to animal's act	1960
Prevention of cruelty to animals to drought and pack animals rules	1965
Prevention of cruelty to animals (licensing of Farriers rule)	1965
Prevention of cruelty to captured and wild animals,	1972
Wild life (Protection) act	1972
Project Tiger	1973
Prevention of cruelty to animal's registration of cattle premises	1978
Transportation of animals rules	1978
Experimental animals act	1982
Animal welfare board of India	1982
Project Elephant	1992

The Indian Penal Code (IPC)

IPC	Deals with
Section 44	Illegal harm to the animals
Section 47	Definition of animals - any living being other than human beings
Section 192	False entry in records
Section 197	False certification of animals
Section 204	Destruction of any documents

Section 269	Spread of a infectious disease due to negligence
Section 270	Intention spreading a infectious disease
Section 271	Not following quarantine rule
Section 272	Adulteration of any food or drink
Section 273	Sale of unfit food or drink-6 months prison with Rs -1000 fine.
Section 274	Adulterating medicinal items for sale
Section 275	Sale of adulterated medicine
Section 289	Disobey any order, with any animal in his possession
Section 304	Negligently causing death of any person
Section 377	Voluntary carnal inter course/ Bestiality with any animals – 10 yr prison with Rs 10000 fine
Section 420	Fraudulent cheating of persons altered animals - prison of 7yr
Section 427 and 428	Mischief, maiming, killing by poisoning – prison of 2 yr
Section 430	Causing decrease of water supply for animals

Blood groups

Animal	Number of blood groups
Dogs	12 (DEA 1.1 is the most important)
Horse	8
Cattle	11
Sheep	7
Pigs	13

Normal parameters

Species	Respiratory rate	Normal temperature	Pulse rate
Cattle	10-30/minute	38.5°C (101.5°F)	60-80/minute
Horse	8-10/minute	38.0°C (100.5°F)	40-60/minute
Sheep	10-20/minute	39.0°C (102.0°F)	70-90/minute
Goat	25-35/minute	39.5°C (103.0°F)	70-90/minute
Pig	10-20/minute	39.0°C (102.0°F)	60-80/minute

Dog (Large breeds)	14-30/minute	37.5-38°C (99.5-101.5°F)	70-90/minute
Dog (Small breeds)	14-30/minute	38.5-39.5°C (101.5-102.5°F)	90-120/minute

Gold standard test

Disease	Test
Glanders	Compliment fixation test (CFT)
Leptospira	Microscopic agglutination test
Rinderpest	Virus neutralization test
Rinderpest (Confirmatory test)	Compliment fixation test (CFT)
PPR	Virus neutralization test
Influenza	Haemagglutination inhibition test (HI)
Rabies	Fluorescent antibody test(FAT), Fluorescent antibody virus neutralization test (FAVN)
Swine fever	FAVN
FMD	Competitive ELISA
Blue tongue	Competitive ELISA, AGID, PCR
African horse sickness	Indirect ELISA, CFT
IBD	Quantitative AGID
Equine infectious anemia	Coggins test

Father of different branches of science

Name of the branch	Name of the scientist considered as father
Veterinary science	Salihotra
Anatomy	Cladius galen
Bacteriology	Robert koch
Cellular and modern pathology	Rudolph virchow
Chemotherapy	Paul ehrlich
Experimental pathology	John hunter
Immunology	Edward jenner

Microbiology	Louis pasteur
Medicine	Hippocrates
Veterinary medicine	Ranatus vegetius
Histology	Xavier Bichat
Parasitology	Francisco redi
Surgery	Shusruta
Modern toxicology	M.J.B.Orfila
Veterinary protozoology	Leukart
Veterinary radiology	Richerd

Various diagnostic tests

Condition	Recommended test
Milk fever	Sulkowitch test (Ca in urine)
Hypomagnesemia	Xylidil test (Mg in urine)
Simple indigestion	Sedimentation activity test
Ketosis	Rothra's test (Ketone bodies in urine) Ross test/Cow side test (Ketone bodies in milk)
Pregnancy diagnosis in mare (estrogen in urine)	Cuboni's test
Pregnancy diagnosis mare (PMSG in serum)	Ascheim zondek test (AZ Test)
Test for imperfect bleeding of meat	Malachite green test
LDA	Liptak test
TRP	Pole or Bamboo test
Cyanide poisoning	Picrate test
Nitrate poisoning	Diphenylamine blue test, Starch iodine test
Hematuria (RBC in urine)	Benzidine test
Glycosuria (Glucose in urine)	Benedicts test
Proteinuria	Hellers test, Biuret test
Bile pigment in urine	Pouchet test, Gmelins test
Bile salt in urine	Hay's test

Various diagnostic tests for parasitic diseases

Condition	Recommended test
Hydatidosis	Casoni's test
Trichomoniasis	Tricin test, Mucous agglutination test
Trypanasomiasis	Formol gel test, Stilbamidine test, Mercuric chloride test
Anaplasma	Capillary agglutination test
Babesia	Capillary agglutination test
Toxoplasma	Sabin and Feldman dye test

Various diagnostic tests for bacterial and viral diseases

Condition	Recommended test
Equine infectious anemia	Coggin's test
Burkholderia mallei (Glanders)	Mallein's test
Streptococcus agalactiae	Hotis test
Streptococcus pyogens (Scarlet fever)	Dick test, Bacitracin test
Listeria	Anton's test
Corynebacterium diphtheriae (Diphtheria)	Schick test, Elek's test
Syphilis	Wassermann test
Ovine pulmonary adenomatosis (Jaagsiekte)	Wheelbarrow test
Bacillus anthracis (Anthrax)	Ascolis test/ String of pearls test
Listeria, Rhodococcus, Staphylococcus	CAMP test
Clostridium perfringens	Nagler reaction
E coli	Eijkman test
Vibriosis	Kanagawa test
Tuberculosis	Stormont test
Paratuberculosis	Johnin test/ Spoligo test
Rickettsia	Weil felix reaction
Klebsiella	Quellung/swelling reaction
Salmonella spp.	Ames test

Brucell spp.	Card/Coomb/Rose bangal/Milk or Whey agglutination test/Strauss test/Koster stain/ Abortus bang ring test (ABR test)

Common Protozoal Diseases and Their Treatment

Trypanosoma	» Diminazene aceturate (Berenil) @ 3.5-7 mg/kg BW, (Not well tolerated by horses) » Homidium bromide (ethidium) and Homidium chloride (novidium) 1 mg/kg BW » Isometamidium (Samorin or Trypamidium) @ 0.25-1 mg/kg BW » Quinapyramine sulfate (Antrycide) @5 mg/kg BW » Quinapyramine sulfate andchloride (Antrycide prosalt) @ 7.4 mg/kg BW » Suramin (naganol) @ 10 mg/kg BW
Babesiosis (Texas fever, Red water fever, Cattle tick fever)	» Diminazeneaceturate (Berenil) @ 3.5 mg/kg BW (12 mg/kg BW as a single dose) – Drug of choice » Imidocarb (Imizol) @ 1 mg/kg BW, 2 mg/kg BW (complete elimination) » Amicarbalide diisethionate » Phenamidine » Parvaquone, Buparvaquone, and alovaquone@ 4-6 mg/kg BW » Tetracyclines » Quinuronium sulfate » Imidodocarb became the drug of choice » B. divergens is a zoonotic disease » Vaccine: Pirodog
Toxoplasma	» Sulfamethazine + Pyrimethamine » Vaccination: Tachyzoites from an incomplete strain, S48 of T. gondii » T. gondii has three infective stages: **1. Tachyzoites - the rapidly multiplying form of the parasite present during the acute stage in the intermediate host** **2. Bradyzoites - present in the tissue cysts** **3. Oocysts (contains sporozoites) -present only in cat feces**

Theileria	» Buparvaquone @ 2.5 mg/kg BW - Drug of choice& most effective drug » Parvaquone @ 10 mg/kg BW » Halofuginone @ 1.2 mg/kg BW » Tetracycline @ 20mg/kg BW » Vaccine: Rakshavac T
Coccidia	» Sulphadimidine (Sulphamethazine) @ 140 mg/kg BW » Amprolium @ 10 mg/kg BW » Monensin @ 2 mg/kg BW » Vaccine: Coccivac, Paracox, Livacox, CoxAbic,
Besnoitiosis (Elephant Skin Disease) is an insect transmitted disease of cattle and goats caused by *Besnoitia besnoiti*	

Vitamins and associated deficiency diseases

Vitamin	Deficiency diseases	Remarks
Vitamin A (Retinol)	» Night blindness » Xerophthalmia » Nutritional roup - chicken	» Anti infectious vitamin » Rods: vision in dim light - rhodopsin » Cones: vision in bright light – iodopsin
Vitamin D (Calciferol)	» Rickets - young » Osteomalacia - adults » Ricketic rosary - chickens	» Anti rachitic factor » Calcifediol-circulatory form » Calcitriol-active form
VitaminE (Tocopherols)	» Crazy chick disease (chicks) » Encephalomalacia (chicks) » Exudative diathesis (chicks) » Nutritional muscular dystrophy (chicks) » Stiff lamb disease (lamb) » White muscle disease (calf) » Mulberry heart disease (pig)	» Anti sterility factor » Vitamin A sparer » Potent antioxident
Vitamin K	» Haemorrhagic blemishes » Sweet clover disease	» Dicumerol – Anti vitamin K » Treatment of sweet clover poisoning

Vitamin C (Ascorbic acid)	» Haemorrhagic diathesis » Scurvy	» Stored in adrenal and pituitary gland » Enzyme L-gluconolactone oxidase necessary for its synthesis
Vitamin B1 (Thiamin)	» Beri-beri/peripheral neuritis » Star gazing attitude » Chastek paralysis » Wernick's encephalopathy	» Energy releasing vitamin » Raw fish contain thiaminase enzyme
Vitamin B2 (Riboflavin)	» Curled toe paralysis (chicks) » Clubbed down condition » Cheilosis - man	
Vitamin B3 (Niacin/Nicotinic acid)	» Black tongue – dogs Pig pellagra	» Tryptophan is pro vitamin to niacin
Vitamin B6 (Pyridoxine)	» Goose stepping gait	» Eluate factor
Vitamin B12 (Cyanocobalamin)	» Pernicious anemia	» Animal protein factor » Microbes of family Actinomycetacea can synthesis it
Pantothenic acid	» Scaly dermatitis » Dog sitting posture in pigs	Filtrate factor
Folic acid	» Macrocytic anemia	
Biotin	» Scaly dermatitis » Red tongue » Fatty liver kidney syndrome	» Preventive against "Egg white injury" » Avidin- Anti nutritional factor
Choline	» Perosis /slipped tendon	

Minerals and associated deficiency diseases

Mineral	Deficiency syndrome	Remarks
Calcium	» Rickets (In young animal) » Osteomalacia (In adults) » Parturient paresis (Cattle) » Lactation tetany (Horse) » Eclampsia (Bitches) » Soft shelled eggs (Poultry)	» Bood level = 9-12 mg/dl » Ca:P = 2:1
Phosphorus	» Pica/ Allotriophagy/Lamsiekte (lame sickness)	» Blood level = 4-12 mg/dl » Pica predisposes botulism.
Potassium	» Muscle weakness	» Intra-cellular ion
Sodium	» Corneal keratinization, Cannibalism and feather pecking – Birds	» Extra cellular ion
Sulphur	» For efficient utilization of urea a **Nitrogen : Sulphur ratio of 10:1** is suggested.	» **Sulphur containing** » Amino acid: Cystine, Cysteine, Methionine » Hormone: Insulin » Vitamin: Biotin, Thiamine
Magnesium	» Hypo magnesemic tetany/grass tetany/grass staggers/lactation tetany/ Wheat poisoning/ Stepping syndrome in pigs	» Blood level = 1.7-4 mg/dl » NH_3 prevents absorption of Mg » K depresses serum Mg
Iron	» Piglet anemia (Thumps)	» Ferritin - storage form » Transferrin - circulatory form » Absorption form - Fe^{2+} (ferrous) » Circulatory form - Fe^{3+}(ferric)
Zinc	» Parakeratosis, » Swallon hock syndrome » Crooked leg	» Stored in bones
Manganese	» Perosis » Slipped tendon	» Enlargement of Tibiometatarsal joint » Slipping of gastrochnemious or Achilles tendon

Selenium	» Muscular dystrophy (white muscle disease) » Predisposes retained placenta and abortion in sheep	» Influences Vit E absorption » Antagonistic to sulphur » Improves hatchability of eggs » Toxicity » Blind staggers (Acute) » Alkali disease (Chronic)
Copper	» Salt sickness (cattle) » Enzootic ataxia (lambs) » Steely wool (sheep) » Sway back/swing back/gingin rickets in lambs and calves » Falling disease (cattle) » Dissecting aneurysm (chicks) » Scouring/peat scours/teart (cattle)	» High molybdenum causes conditional Copper deficiency » ↑ S and ↑ Mo causes Cu deficiency
Iodine	» Goiter » Critinism - young » Myxedema – old	
Molybdenum		**Toxicity** » Teart » Peat scours
Fluorine		**Toxicity** » Shifting lameness » Mottling of teeth
Cobalt	» Enzootic marasmus » Hill sickness » Bush sickness » Coast disease » Wasting disease » Nakuritis » Pinning	

OIE recommended quarantine days

Diseases	Days
Cattle	
Rinder pest	21 days
HS & Theileriosis	28 days
Infectious bovine rhinotracheitis	30 days

Tuberculosis	90 days
Anaplasmosis	100 days
CBPP	180 days
Sheep and Goat	
Pox	21 days
Brucellosis	30 days
Blue tongue	40 days
CCPP	180 days
Swine	
TGE	28 days
Aujesky's disease	30 days
Swine fever	40 days
Equine	
Glanders	28 days
Dourine	28 days
Equine influenza	28 days
Contagious equine metritis	30 days
Birds	
Fowl cholera	14 days
ND & fowl plaque	21 days
Fowl typhoid	28 days
Infectious bronchitis	28 days
Aspergillosis	45 days
Canines	
Rabies	4 months

Metabolic diseases

Disease	Etiology and epidemiology	Diagnosis	Treatment	Control
Milk fever of cattle	Hypocalcemia. Occurs primarily in dairy cows after 3rd lactation. Also in beef cows. 48 hours before or after calving and in mid-lactation	Low levels of serum calcium	Calcium salts IV, SC	Dietary management of anions-cations
Downer cow	Complication of milk fever; recumbent too long before treatment	Clinical findings. Serum levels of CPK	Supportive therapy	Early treatment of milk fever cases

Acute hypokalemia of cattle	In lactating dairy cows treated with corticosteroids for recurrent ketosis, and mastitis	Low levels of serum potassium	Potassium chloride, IV	Avoid excessive use of isoflupredone for recurrent ketosis
Lactation tetany of mares	High producing lactating mares being nursed by vigorous well-nourished foal a few weeks of age	Low levels of serum calcium	Calcium borogluconate	None
Hypomagnesemic tetany (lactation tetany of cattle)	Lactating dairy cows on lush fertilized pastures. Also in beef cows before and after calving	Low levels of serum magnesium	Magnesium salts, IV	Supplementation of diets at strategic times with magnesium salts
Ketosis of cattle	Before and after parturition in cattle	Blood, urine and milk levels of ketone bodies during the transition period 3 weeks before and after parturition	Glucose, IV Propylene glycol and electrolyte solutions orally.	Prepartum dietary management of energy intake
Pregnancy toxemia of sheep	Declining plane of nutrition in ewes in late pregnancy	Urinary ketones. Hypoglycemia. Metabolic acidosis, terminal uremia	Caesarean section or induction of parturition	Nutritional management of pregnant ewes to ensure a rising plane of nutrition in second half of pregnancy
Fatty liver of cattle	High-producing dairy cows overfed during the dry period. In well-conditioned beef cattle in late pregnancy when energy intake suddenly decreased	Ketonemia, ketonuria, Hypoglycemia	Poor prognosis in severe cases. Fluid and electrolyte therapy, glucose IV, propylene glycol orally and insulin	Nutritional management of pregnant cows to avoid excessive weight gain. Avoid situations which reduce feed intake at time of parturition
Post parturient hemoglobinuria	Dietary deficiency in high-producing dairy cows 2-4 weeks after calving. Copper deficient area. Cruciferous crops	Low serum inorganic phosphorus. Low PCV, Hemoglobinuria	Whole blood transfusion. Sodium acid phosphate, IV Dicalcium phosphate orally	Ensure adequate dietary phosphorous intake

Equine hyperlipidemia	Deranged fat metabolism. Pregnant or lactating middle-aged ponies, donkeys, and American miniature horses	Hyperlipidemia	Interal or parenteral feeding, insulin, heparin. Treat underlying disease	Maintain optimal body condition. Prevent disease and nutritional stress in pregnancy

Nutritional Disease [Minerals]

S.No.	Mineral	Deficiency disease	Toxicity
1.	Calcium [Ca]	1. Rickets [young animal] 2. Osteomalacia [adult animal] 3. Milk fever [post-parturient paresis/ parturient hypocalcaemia/eclampsia] in dairy cow 4. Calcium tetany in young animal 5. Cage layer fatigue in caged hens 6. Osteoporosis & osteopenia	Osteopetrosis [marble bone disease] Kidney stone Nephropathy& visceral gout in young birds
2.	Phosphorus [P]	1. Pica/ allotriophagia [depraved appetite] 2. Rickets [young animal] 3. Osteomalacia [adult animal] 4. Lamsiekte disease [lame sickness] 5. Post Parturient Haemoglobinuria [PPH] 6. Osteoporosis 7. Poor fertility & irregularity of estrus	**Big head disease/** Nutritional secondary hyperparathyroidism [NSH]/ **Bran disease in horse/** Millers disease
3.	Magnesium [Mg]	1. Grass tetany/ grass staggers/ wheat poisoning in calves & cows 2. Lactation tetany/ hypomagnesaemic tetany in lactating cows 3. Magnesium tetany in young neonatal calves	
4.	Iron [Fe]	1. Hypochromic microcytic anaemia 2. Piglet anaemia/ Thumps	Siderosis Hypersideremia [high plasma iron]

5.	Sodium [Na]	1. Keratinization of corneal epithelium 2. Delayed sexual maturity 3. Impaired estrus 4. Softening of the bones 5. Cannibalism in poultry	Watery faeces Increased water consumption
6.	Chlorine[Cl]	1. Decreased appetite 2. Marked decline in weight & milk yield 3. Lowered fertility 4. Cannibalism in chicks	Salt poisoning in pigs and poultry mainly Oedema
7.	Potassium [K]	1. Decreased growth rate 2. General weakness	
8.	Copper [Cu]	1. Enzootic ataxia in lamb [sway back disease in England] 2. Falling disease in cattle 3. Microcytic hypochromic anaemia 4. Stringy or steely wool 5. Depigmentation of hair, feather & wool	
9.	Cobalt [Co]	1. Normocytic normochromic anaemia 2. Enzootic marasmus [hill sickness / wasting disease/ pine disease/ grand traverse disease]	
10.	Mangnese [Mn]	1. Perosis / slipped tendon/ chondrodystrophy Crooked legs & enlarged hocks in swine	
11.	Iodine [I]	1. Simple goiter	Iodide goitre
12.	Zinc [Zn]	1. Parakeratosis in pigs	
13.	Molybdenum [Mo]	1. Poor growth & depressed hatchability	Teartness Molybdenosis
14.	Selenium [Se]	1. Exudative diathesis [haemorrhagic disease] in chickens 2. White muscle disease [muscular dystrophy] 3. Gizzard myopathy in turkey 4. Hepatic necrosis in rats and pigs	Blind staggers in cattle Alkali disease/Degnala disease/ Saliman disease Bob – tail disease
15.	Fluorine [Fe]	1. Tooth decay in man & experimental animals	Fluorosis Chalky and mottling appearance in teeth

Nutritional Disease
[Vitamins]

S.No.	Vitamin	Scientific Name	Deficiency Disease
1.	Vitamin A [Anti-infective Vitamin]	Retinol	1. Night Blindness [nyctalopia] 2. Xerophthalmia 3. Keratomalacia 4. Nutritional roup in birds 5. Bitot spots
2.	Vitamin D [Anti-rachitic Vitamin]	Ergocalciferol [Vit- D2] Cholecalciferol [Vit- D3]	1. Rickets [young animal] 2. Osteomalacia [adult animal] 3. Hypocalcaemia 4. Hypophosphataemia 5. Osteoporosis
3.	Vitamin E [Anti-sterlity Vitamin] & [Antioxidant]	D-alpha-Tocopherol	1. White muscle disease [nutritional myopathy] in young animals 2. Stiff-lamb disease in suckling lambs 3. Mulberry heart disease in pigs 4. Acute hepatic necrosis or hepatosis dietetica or dietary hepatic necrosis in young pigs 5. Yellow fat disease or pansteatitis in cats 6. Crazy chick disease or Encephalomalacia [young growing birds] 7. Exudative diathesis [young growing birds] 8. Nutritional muscular dystrophy or myopathy [young growing birds]
4.	Vitamin K [Anti-haemorrhagic Vitamin]	Phylloquinone [Vit-K1] Menaquinone [Vit-K2] Menadione [Vit-K3]	1. Haemorrhagic sweet clover disease [Bleeding diathesis] in ruminants 2. Fat malabsorption syndrome

5.	Vitamin B1 [Anti beriberi Vitamin]	Thiamine	1. Polyneuritis in birds [star gazer position or ophisthotonus] 2. Polioencephalomalacia [PEM] in ruminants in USA or 3. Cerebrocortical necrosis [CCN] in ruminants in Europe 4. Peripheral neuropathy 5. Chastek paralysis in fox 6. Beriberi in man
6.	Vitamin B2 [Vitamin G]	Riboflavin	1. Curled-toe paralysis in chicken 2. Clubbed down condition in chicken embryo
7.	Vitamin B3 [pellagra preventing factor]	Niacin or Nicotinic acid	1. Canine pellagra [black tongue] 2. Swine pellagra 3. Chondrodystrophy [young growing birds] 4. Human pellagra [blue tongue]
8.	Vitamin B5 [Anti dermatitis factor] [filtrate factor]	Pantothenic acid Or pantoyl-β-alanine	1. Goose - stepping in pig.
9.	Vitamin B6	Pyridoxine	1. Microcytic, hypochromic anaemia in pigs & dogs 2. Rat pellagra 3. Haemosiderosis
10.	Vitamin B7 [Vitamin-H] or Coenzyme R or Anti- egg white injury factor	Biotin	1. "Parrot beak" chondrodystrophy in growing chicks 2. Fatty liver and kidney syndrome [FLKS] in chicken 3. Perosis [slipped tendon] in poultry 4. Spectacle eye in rat[peculiar alopecia]
11.	Vitamin M or Vitamin B9 [Folic acid / folate /folacin]	Pteroyl monoglutamic acid	1. Macrocytic hypochromic megaloblastic anaemia in poultry mainly 2. Cervical paralysis in turkey poults

12	Vitamin B4 [lipotropic factor /lipotrope]	Choline	1. Perosis or slipped tendon [chondrodystrophy] in poultry chicks 2. Fatty liver in newborn pigs & calves
13.	Vitamin B12	Cyanocobalamin	1. Megaloblastic anaemia 2. Neuropathy 3. Pernicious anaemia in human
14.	Vitamin C [antioxidant]	L-Ascorbic acid	1. Scurvy in guinea pig & primates including human 2. Severe stress of heat & physical trama, infections in chicken

Few Important Points to be Remembered

» Methods of physical examination in cattle
  - Inspection: observing through eyes (Examination from distance)
  - Palpation : feeling through hands and fingers
  - Percussion: tapping through fingers
  - Auscultation: listening the sounds through stethoscope

» The phonendoscope is used for auscultation purpose in case of ruminants

» Normal pulse and respiration ratio is 4:1

» Bloat is characterized by drum like sound on percussion

» Left abomasal displacement - simultaneous auscultation and percussion over an area between the upper third of the 9th and 12th ribs of abomasal wall reveals sounds called Ping sound/metallic sound/ penny dropping sound/ tinkling sound/ splashing sound/ pebble in well sound

» William's auscultation is the simultaneous auscultation of reticulum and palpation of rumen in Traumatic reticulo-peritonitis

» Recording and Measurement of heart sounds is done by Phonocardiography

» CSF pressure is measured by Manometer

» The site for the auscultation of heart is 2nd to 5th intercostals space is the

» Dorsal curvature of spinal column is known as Kyphosis

» Ventral curvature of spinal column is known as Lardosis

» Lateral curvature of spinal column is known as Scoliosis

» A cow sits on the sternum and rests on its flank in Milk fever

» In downer cow syndrome, a cow has no defect in eating, defecation or urination but will be unable to stand and remains in sternal recumbancy

» Amaurosis is total blindness

» Amylopia is partial blindness

» Abducted elbow with extension of head and neck in a cow with brisket edema and jugular pulsation is seen in traumatic pericarditis

» A male dog urinates like a bitch in cystitis and urolithiosis.

» Somnolence is the state when animal is depressed to the point that it is unable to hold its head

» Normal rumen fluid pH: 6.2-7.2

» Rumen fluid pH in acid indigestion: 4-5

» Rumen fluid pH in protein putrefaction/alkaline indigestion: 8-10

» Pulse is characterized by rate, rhythm and quality or volume

» A horse adopting a dog sitting posture with kicking at the belly is seen in acute gastric dilatation

» Goose stepping gait in pigs is due to the deficiency of pantothenic acid

» High stepping gait with rigidity of limbs is seen in tetany

» Knuckling of fetlock is seen in neuritis and nerve paralysis

» A pulse which is brief, small and hard in nature is called the wiry pulse

» When the pulse wave is small, weak and prolonged it is termed as thready pulse

» The respiratory centre is located in the medulla oblongata

» Septic shock occurs predominantly due to Gram positive organism

» Depraved or perverted appetite is known as pica/allotriophagia

» Coprophagia is the eating of its own or other animal's faeces.

» Pilophagia is the licking of hair and body coat.

» Normal rumen motility is 7-12/5 minutes.

» The interval between two rumen motility should not be more than 2 minutes

» Rumen hypermotility is seen in conditions like bloat, acidosis, simple indigestion, TRP.

» Grunting can be heard on auscultation of traumatic reticulo-peritonitis

» Pole or Bamboo test is the raising of Animal forcefully by placing the pole on the xiphoid cartilage of sternum in lower third of the chest. It will make the animal to grunt. Used in TRP

- In dogs the liver enzyme measured is SGPT
- In large animals the liver enyzme measured is SGOT
- Diaphragmatic hernia is common in Buffaloes
- Liptak test is used for the diagnosis of LDA
- Abomasal pH is 2-4
- Treatment for ovine ketosis is 5% dextrose
- Treatment of choice in bovine ketosis is 50% dextrose (replacement therapy). And the hormonal therapy is recommended by use of dexamethasone
- Treatment of hypomagnesaemia is with 25% calcium borogluconate and 5% magnesium hypophosphate
- Milk fever is common in Jersey cows
- Ketosis is common in Guernsy cows
- Downer cow syndrome is common in Holstein Friesian
- In ECG, prolongation of P wave indicates left atrial enlargement
- In ECG, increased P wave amplitude indicates right atrial enlargement
- In ECG, tall R wave and prolongation of QRS complex indicates left ventricular enlargement
- In ECG, deepening of S wave indicates Right ventricular enlargement
- In ECG, peaked T wave indicates hyperkalemia
- The predominant bacteria in rumen fluid are gram negative. In case of acidosis it is gram positive
- Acid indigestion occurs due to ingestion of large amounts of highly fermentable carbohydrates
- Diagnostic tests used for simple indigestion are sediment activity test and cellulose digestion test
- Acute pancreatitis in dogs leads to a praying stance/posture
- TRP is characterised by leucocytosis with neutrophilia (shift to left)
- Vagus indigestion is characterized by papple shaped abdomen that is pear shaped in the right side and apple shaped in left side.
- Normal blood calcium level is 9-11mg/dl in cows
- Time of occurrence of milk fever is within 48 hours of parturition
- The rectal temperature in case of milk fever is subnormal (36-38°C)

» CPK and ALT liver enzyme levels are increased in downer cow syndrome

» Ketosis in cows mainly occurs due to negative energy balance

» Pregnancy toxaemia in sheep is due to ketosis and in cattle is called fatty liver syndrome

» Lactation tetany in horse is due to hypocalcemia

» Lactation tetany in cattle is due to hypomagnesemia

» Eclampsia in bitches is due to hypocalcemia and hypoglycaemia

» Nervous signs of ketosis is due to production of isopropyl alcohol which is a breakdown product of acetoacetic acid in the rumen

» Blood glucose level in case of ketosis is 20-40 mg/dl

» The normal blood ketone body level is 50 mg/dl

» Diagnostic choice for fatty liver syndrome is liver biopsy

» Time of occurrence of bovine ketosis is 60 days after parturition

» Time of occurrence of post parturient haemoglobinuria is 2-4 weeks after parturition

» Low milk fat syndrome due to a decreased formation of acetate in rumen is due to low fibre diets

» Milk is a poor source of copper and iron. It is a rich source of calcium and phosphorus

» Occurrence of post parturient haemoglobinuria is due to feeding of cruciferous plants

» Myoglobinuria and muscle degeneration are the pathological changes seen in the case of azoturia in horses

» The normal ratio of Calcium and Magnesium in blood is 6:1

» Prepartum diet containing high amount of sulphur and chloride (anions) reduces the chances of milk fever

» The prepartum diet contains high amount of sodium and potassium (cations) increases the chance of milk fever

» Eclampsia in bitches is characterised by clinical signs like opisthotonus arch, tonoclonic conulsion, high rise in temperature (108°C) etc

» Phosphorus deficiency may reduce glucose utilization leading to reduced production of ATP which is essential to maintain the integrity of RBC

» Phosphorus deficiency may cause reduction of red cell glycolysis and decrease in ATP synthesis

» Normal level of phosphorus is 4-7 mg/dl. In case of deficiency it decreases to 0.5 to 3 mg/dl.

- In azoturia of horses the serum creatinine phosphokinase (CPK) level is highest in skeletal and cardiac muscle degeneration. The AST level is also increased
- Normal serum magnesium level is 1.7 to 3 mg/dl. In hypomagnesaemia it reduces to 0.5 mg/dl.
- Fatty liver syndrome is treated by administration of choline chloride (Which facilitates the transportation of fatty acids from liver to fat deposits) and vitamin B_{12}
- Baby pig disease is due to hypoglycaemia
- Thiamine hydrochloride helps in lactate metabolism and is given for acid indigestion
- TRP is also called as hardware disease.
- Vagus indigestion is also called as Hoflund syndrome
- In vagus indigestion constipation is an important clinical sign.
- In vagus indigestion failure of two sites is seen: Omasal transport failure and Pyloric outflow failure which causes hypochloric metabolic alkalosis
- Bradycardia can be considered as a diagnostic factor for vagal indigestion
- Atropine test is used for Bradycardia in which 30 mg of atropine sulphate is given s/c and heart beat is monitored for every 2 to 5 minutes
- LDA is common in high yielding dairy cows rather than RDA
- Ping sound (high-pitched) is heard in case of LDA, RDA, cecal dilatation and tortion, intestinal tympany associated with acute obstruction or paralytic ileus, pneumoperitonium and tortion of the coiled colon.
- Pung (low pitched ping) is heard in gas filled rumen
- The etiology for secondary bloat is oesophageal obstruction, vagus indigestion, diaphragmatic hernia, tetanus, TRP, tumors, hypocalcemia, hydatid cyst and worm infestation (amphistomosis)
- Treatment of choice for acid indigestion is 5% sodium Bicarbonate.
- Treatment of choice for milk fever is 25% calcium borogluconate.
- Treatment of choice for eclampsia in bitches is 10% calcium borogluconate

Multiple Choice Questions

1. 'Tall R' wave in ECG denotes
a. Bilateral ventricular enlargement
b. Left ventricular enlargement
c. Bilateral atrial enlargement
d. Right ventricular enlargement

2. Haemoptysis means presence of blood in
a. Urine b. Sputum
c. Vomitus d. Stools

3. Lactation tetany in cattle is due to
a. Hypoglycemia
b. Hypomagnesaemia
c. Hypocalcemia
d. Hypophosphataemia

4. Iron deficiency anaemia is more common in
a. Calves b. Lambs
c. Piglets d. Puppies

5. Significant amount of delta bilirubin in plasma suggests
a. Acute hepatitis b. Heaptic necrosis
c. Cholestasis d. Cirrhosis

6. Goose stepping in pigs is characteristic sign of
a. Thiamin deficiency
b. Calcium deficiency
c. Pantothenic acid deficiency
d. Phosphorus deficiency

7. Peat scours in calves is due to deficiency of
a. Calcium
b. Selenium and Vit. E
c. Copper
d. Cobalt

8. Eclampsia in mares is caused by
a. Hypoproteinemia b. Hypophosphatemia
c. Hypomagnesemia d. Hypocalcemia

9. Which of the following is a antiketogenic volatile fatty acid for ruminanats
a. Acetic acid b. Butyric acid
c. Propionic acid d. Succinic acid

10. Polioencephalomalacia is due to deficiency of
a. Riboflavin
b. Thiamin
c. Niacin
d. cyanocobalamine

11. Papple shaped abdomen is characteristic of
a. Traumatic reticuloperitonotis
b. Abaomasal displacement
c. Omasal impaction
d. Vagal indigestion

12. Ovine ketosis is also referred as
a. Pregnancy toxemia
b. Twin lamb disease
c. Acetonemia of sheep
d. All of the above

13. Barker foal syndrome is due to
a. Antenatal or postnatal hypoxia
b. Isoimmune hemolytic anaemia
c. Clostridial infection
d. Premature foaling

14. Persistent ruminal tympany, bradycardia and displaced heart sounds in cattle suggests
a. Traumatic Pericarditis
b. Traumatic reticulitis
c. Diaphramatic hernia
d. Traumatic reticulo-peritonitis

15. Pollakyuria means
a. Excessive urination
b. Frequent painful urination
c. Constant dribbling of urine
d. Decreased output of urine

16. Stranguria means
a. Frequent painful urination
b. Urination with abnormal constituents
c. Constant dribbling of urine
d. Decreased output of urine

17. Azotemia means
a. Excessive accumulation of NPN
b. Uraemia
c. Both a and b
d. Decreased levels of NPN

18. Paper crackling rales on auscultation is suggestive of
a. Pneumonia
b. Bronchitis
c. Pulmonary emphysema
d. Pulmonary oedema

19. Acute bovine pulmonary emphysema and edema (*ABPPE*) is caused by
a. Excessive feeding of silage
b. Excessive feeding of lush greens
c. Feeding of moldy hay
d. Excessive feeding of roughages

20. Systolic and diastolic murmur on auscultation is suggestive of
a. Myocarditis
b. Pericarditis
c. Patent ductus arteriosus
d. Vegetative endocarditis

21. Diaphragmatic hernia is more common in
a. Cows b. Buffaloes
c. Bullocks d. Sheep

22. Increased frequency, tenesmus with presence of abundant mucus in faeces is suggestive of
a. Small bowel diarrhea
b. Large bowel diarrhea
c. Exocrine pancreatic insufficiency
d. None of the above

23. Diabetic cataract is due to accumulation of which of the following in lens capsule
a. Insulin b. Sorbitol
c. Isopropanol d. Ketoacids

24. 'Gag reflex test' is performed to know the functional ability of
a. Glossopharyngeal nerve
b. Vestibulocochlear nerve
c. Hypoglossal nerve
d. Trigeminal nerve

25. Water-hammer pulse is pathognomonic of
a. Interventricular septal defect
b. Patent ductus arteriosus
c. Dilated cardiomyopathy
d. Aortic incompetence

26. 'P' wave in ECG denotes
a. Atrial repolarization
b. Ventricular depolarization
c. Atrial depolarization
d. Ventricular repolarization

27. Haemotochezia means presence of blood in
a. Urine b. Sputum
c. Vomitus d. Stools

28. Drug of choice for status epilepsy is
a. Diazepam I/V
b. Diazepam orally
c. Phenobarbitone orally
d. Primidone

29. Metabolic acidosis is suggestive of
a. High plasma bicarbonate
b. Low carbonic acid
c. Low plasma bicarbonate
d. High plasma phosphate

30. Iron deficiency anaemia is
a. Normocytic normochromic
b. Normocytic hypochromic
c. Microcytic hypochromic
d. Macrocytic hypochromic

31. Adipocere is observed as
a. Accumulation of fat
b. Postmortem change
c. Tumor of adipose tissue
d. Antemortem change

32. The signs of Milk fever are observed when blood calcium level falls below
a. 8 mg/dl b. 10 mg/dl
c. 5.5 mg/dl d. 6.5 mg/dl

33. Curled toe paralysis in chicks is due to deficiency of
a. Riboflavin b. Thiamin
c. Niacin d. cyanocobalamine

34. Free gas bloat is also known as
a. Pasture bloat
b. Primary tympany
c. Frothy bloat
d. Secondary Tympany

35. Which of the following exhibit mucokinetic and bronchodilatory effect

a. Frusemide b. Theophylline
c. Clenbuterol d. Bromohexine

36. The most important cause of allotriophagia in animals is

a. Calcium deficiency
b. Protein deficiency
c. Phosphorus deficiency
d. Vit. D deficiency

37. Puerperal tetany in bitches is caused by

a. Hypoglycemia
b. Hypocalcemia
c. Hypomagnesemia
d. Hypocalcemia and hypoglycemia

38. Enzootic ataxia in lambs is due to deficiency of

a. Copper
b. Selenium and Vit. E
c. Zinc
d. Vit. A

39. Complicated Diabetes mellitus is confirmed by presence of

a. Glycosuria
b. Ketonuria
c. Glycosuria with Ketonuria
d. Proteinuria

40. Crazy chick disease is due to deficiency of

a. Vit. A b. Vit. K
c. Vit. C d. Vit. E

41. Which of the following is an excellent intracranial decompressant?

a. Frusemide
b. Spironolactone
c. Mannitol
d. Mannitol with corticosteroid

42. Sour smell of rumen fluid is characteristics of

a. Acidosis
b. Alkalosis
c. Simple indigestion
d. Vagus indigestion

43. Ovine ketosis is more common during

a. Late gestation
b. One week post lambing
c. Four weeks post-lambing
d. Immediately after lambing

44. Presence of formiminoglutamic acid in urine is confirmation of

a. Copper deficiency b. Selenium deficiency
c. Cobalt deficiency d. Calcium deficiency

45. Pseudo cow pox lesions are characterized by

a. Pus
b. Horse shoe shaped ring scab
c. Blood oozing
d. None of the above

46. The viral disease of horses restricted to North and South Americas only is

a. EIA
b. Equine influenza
c. Equine encephalomyelitis
d. AHS

47. The last stage in the resolution of the body after death

a. Mummification b. Masseration
c. Adipocere d. Putrefaction

48. The drug of choice in the treatment of wooden tongue is

a. Alincomycin b. Gentamicin
c. Potassium iodide d. Tetracycline

49. Vaginal mucus agglutination is useful to diagnose

a. Brucellosis b. Anthrax
c. Erysipelosis d. Leptospirosis

50. The following species is resistant to botulism

a. Cattle b. Horse
c. Sheep d. Pigs

51. Trismus with restricted jaw movement and saw horse posture are characteristic symptoms of

a. Actinobacillosis b. Listeriosis
c. Enteriotoxaemia d. Tetanus

52. **The vaccine inoculated in poultry birds on the day of hatching is**
a. Avian leucosis complex
b. Ranikhet disease
c. Marek's disease
d. IBD

53. **Development of pustular and scabby lesions on the muzzle and lips of sheep and goats are characteristic symptoms of**
a. PPR b. RP
c. Orf d. Bluetongue

54. **Bovine viral diarrhea virus is antigenically related to**
a. Hog cholera and Border disease
b. PPR and Measles
c. CD and Measels
d. None of the above

55. **Death in puppies suffering for canine parvo virus infection are mainly due to**
a. Severe dehydration
b. Excessive blood loss
c. Myocarditis
d. None of the above

56. **Shipping fever in cattle is caused by**
a. Pasteurella haemolytica
b. Pasteurella multocida
c. Mycoplasma mycoides
d. Chlymydia psittaci

57. **The allergic test used for diagnosis of glanders is**
a. Strauss reaction b. Mallein test
c. Johnin test d. Coggin's test

58. **Tarry coloured blood oozing out from natural body orifices is observed in**
a. Canine parvoviral infection
b. Anthrax
c. Clostridial infection
d. Rinderpest

59. **Pruritus is symptom of**
a. Scrapie b. Pseudorabies
c. Mange d. All of the above

60. **The proportion of diseased animals that die is called**
a. Mortality b. Incidence
c. Case fatality d. Morbidity

61. **The amount of organism required to initiate infection indicates**
a. Virulence b. Pathogenesity
c. Susceptibility d. Infectivity

62. **The disease that occurs with a predictable regularity with minor fluctuations in its frequency, then such occurrence is called**
a. Sporadic b. Endemic
c. Pandemic d. Epidemic

63. **Transmission of an infection by doctor during surgical or medical practice is called**
a. Vertical transmission
b. Iatrogenic transmission
c. Transtadial transmission
d. Aerial transmission

64. **Study of animals and plants in relation to habit and habitats is called**
a. Ecology b. Biome
c. Epornitics d. Zoonosis

65. **Measures to make regional extinction of an infectious agent is called**
a. Control b. Eradication
c. Tertiary prevention d. Niche filling

66. **Following snails act as an intermediate host in amphistomiasis in cattle**
a. Lymnaeid snails
b. Planorbid snails
c. Both a and b
d. None of the above

67. **Visceral larva migrans is caused by the migration of larvae of**
a. Toxocara canis
b. Dictyocaulus viviparous
c. Onchocera gibroni
d. None of the above

68. Anaplasma marginale is observed in
a. Erythrocytes
b. Leucocytes
c. Muscle cells
d. None of the above

69. Hypoalbuminia observed in fascioliosis is due to
a. Reduced albumin levels due to renal loss
b. Reduced albumin synthesis due to liver damage
c. Deficiency of proteins in diet
d. None of the above

70. Berenil is the drug of choice for
a. Babesiosis b. Anaplasmosis
c. Theileriosis d. None of the above

71. Gid in goat is caused by
a. Coenurus cerebralis
b. Cysticercus pisiformis
c. Coenurus serialis
d. None of the above

72. Etiology of Verminous bronchitis is
a. Dictyocaulus spp
b. Bunostomum spp
c. Trichuris spp
d. Stephanurus spp

73. Intermediate host for fasciola hepatica is
a. Planorbid snails
b. Lymnaeid snails
c. Both a and b
d. None of the above

74. Hydatid cyst is larval stage of
a. T. multiceps b. T. hydatidigena
c. E. granulosus d. T. saginata

75. 'Clay-pipe stem' fibrosis of liver is a pathognomonic lesion in
a. Amphistomiasis b. Fascioliais
c. Ascariasis d. Schistosomiasis

76. 'Thumps' is a characteristic clinical sign noticed in ascariasis infestation of
a. Piglets b. Foals
c. Calves d. Pups

77. The species of Theileria recorded in goats is
a. T. annulata b. T. parva
c. T. hirci d. T. mutans

78. Quinapyramine salts are used for the treatment of
a. Strongylosis b. Theileriasis
c. Trypanosomiasis d. Anaplasmosis

79. Koch blue bodies in theileria infection can be demonstrated by
a. Liver biopsy
b. Lymphnode biopsy
c. Wet mount smear
d. Blood smear examination

80. The normal ratio of calcium and magnesium in body is
a. 6 : 1 b. 2 : 1
c. 3 : 1 d. 1 : 6

81. Left eleventh intercostal space during expiration is preferred for biopsy of
a. Liver b. Spleen
c. Intestines d. Pancreas

82. Part of water in the body is approximately
a. 1/4 b. 1/2
c. 3/4 d. 2/3

83. Percentage of water in the blood is approximately
a. 45 % b. 55 %
c. 65% d. 80 %

84. Preferred vein for intravenous injection in cattle is
a. Internal jugular vein
b. Cephalic vein
c. Saphenous vein
d. External jugular vein

85. Common site for taking pulse in goats is
a. Femoral artery
b. Facial artery
c. Coccygeal artery
d. Carotid artery

86. Preferred site for recording of pulse in dogs is
a. Middle coccygeal artery
b. Femoral artery
c. Axillary artery
d. Median artery

87. Wing vein is used for the intravenous injection in
a. Ox
b. Horse
c. Dog
d. Fowl

88. Process of tapping or striking on the surface of body with the help of finger tips or an instrument is called
a. Inspection
b. Palpation
c. Percussion
d. Auscultation

89. Instrument used for the tapping or striking on the surface of body is called
a. Stethoscope
b. Pleximeter
c. Barometer
d. Phonendoscope

90. Among the following domestic animals, sweating ability is highest in
a. Cattle
b. Horse
c. Sheep
d. Goat

91. Managemental practice of destruction of horn buds is called
a. Dehorning
b. Disbudding
c. Amputation of horn
d. All of the above

92. A groove present in the planum nasolabiale of horse is known as
a. Philtrum
b. Rugae
c. Isthmus faucium
d. None of the above

93. Instrument used for examination of nasal passage is
a. Rhinolaryngoscope
b. Craniograph
c. Phonendoscope
d. None of the above

94. Organ of prehension in horse is
a. Lip
b. Teeth
c. Tongue
d. Fore limb

95. Preferred site for collection of CSF in dog is
a. Cisterna magna
b. Lumbar cistern
c. Cisterna pontis
d. Cisterna chiasmatis

96. Best site for auscultation of heart is
a. Space from 3rd to 6th rib on left side
b. Space from 3rd to 6th rib on right side
c. Space from 2nd to 5th rib on left side
d. Space from 2nd to 5th rib on right side

97. Blood volume accounts for _____ % of body weight
a. 80 %
b. 0.8 %
c. 8.0 %
d. 0.6 %

98. Compartment of ruminant stomach involved in Hardware disease is
a. Rumen
b. Reticulum
c. Omasum
d. Abomasum

99. A process of puncturing of abdomen for removal of fluid is called
a. Thoracocentesis
b. Abdominocentesis
c. Amniocentesis
d. None of the above

100. Fluid of choice for cerebral edema
a. Dextrose 5%
b. Mannitol
c. RL
d. DNS

101. In hyperthermia, increased thirst is due to
a. High environmental temperature
b. Profused sweating
c. Loss of sod. chloride from the body
d. Dryness of mouth

102. Haemoglobinuria associated with hepatitis is common in
a. Cattle
b. Sheep
c. Horses
d. Pigs

103. Ischemic myopathy is a feature of
a. Sodium deficiency
b. Weak calf syndrome
c. Downer cow syndrome
d. Milk fever

104. The B complex vitamin having potential glucogenic and antilipolytic activity
a. Riboflavin b. Thiamine
c. Niacin d. Pyridoxine

105. A drug that can breakdown starch in the rumen
a. Soda. Bicarb. b. Mag. Hydroxide
c. Chloral hydras d. Monensia

106. Biological precursor for Co-enzyme A used for the treatment of bovine ketosis
a. Vebonal b. Cysteamine
c. Monensia d. Trembolone

107. Eclampsia in bitches is best treated with
a. 50% Dextrose
b. 10% Cal. Gluconate
c. Thiamine
d. Mifex

108. Lactation tetany in mare is caused by
a. Hypoglycemia
b. Hypocalcemia
c. Hypophosphataemia
d. Hypomagnesaemia

109. The specific diagnostic enzyme for downer cow
a. SGPT b. CPK
c. SDH d. ALP

110. The most useful anionic compound for prevention of milk fever in cattle
a. Sodium chloride
b. Pot. Chloride
c. Ammonium chloride
d. Calcium chloride

111. Type of fever in canine distemper
a. Biphasic fever b. Atypical fever
c. Intermittent fever d. Recurrent fever

112. Ovine ketosis is more common during
a. Early lactation
b. Late pregnancy
c. Early pregnancy
d. Late lactation

113. Myxedema with sad expression and rat tail appearance is a feature of
a. Hyperparathyroidism
b. Hypoadrenocortism
c. Hypothyroidism
d. Hypopituitarism

114. Mastitis Metritis Agalactia syndrome is more common in
a. Cows b. Buffaloes
c. Goats d. Pigs

115. Baby pig disease is characterized by
a. Hypocalcaemia b. Hypoglycemia
c. Hypothyroidism d. Hypopituitarism

116. Death of rabid dog is due to
a. Cardiac failure
b. Respiratory failure
c. Nervous system failure
d. All of the above

117. Normal urine protein creatinine ratio is
a. <1 b. <1 to 5
c. <0.1 d. >10

118. A positive hepatojugular reflux is a diagnostic feature of
a. Right CHF
b. Left CHF
c. Pericardial disease
d. Myocarditis

119. The signs of anaemia develop only when haemoglobin level falls below
a. 50% b. 80%
c. 30% d. 75%

120. Osteodystrophia fibrosa or bran disease occurs in horses fed on high level of
a. Phosphorus b. Calcium
c. Vit. D d. Magnesium

121. Valvular disease is mainly characterized by presence of

a. Friction sound b. Murmurs
c. Gallop sound d. Box sound

122. Observation of the animal made from distance is called

a. Inspection b. Palpation
c. Percussion d. Auscultation

123. Leucomalachite green test is used to detect

a. Blood stain
b. Semen
c. Urine
d. None of the above

124. Method in which a part or any organ of body is touched with gentle pressure is called

a. Inspection b. Palpation
c. Percussion d. Auscultation

125. The normal ratio of calcium and phosphorus in body is

a. 1 : 2 b. 2 : 1
c. 3 : 1 d. 1 : 3

126. Organ of prehension in dog is

a. Lip b. Teeth
c. Tongue d. Fore limb

127. Softening of mature bone is called

a. Rickets
b. Osteomalacia
c. Osteoperosis
d. Osteodystrophic fibrosa

128. Simple method for assessing bone marrow activity in anaemic patient is

a. RBC count
b. WBC count
c. DLC
d. Reticulocyte count

129. Deficiency of ..... causes haemolytic anaemia in dog

a. Pyruvate kinase b. CPK
c. Erythropoitein d. Transketolase

130. Protein in CSF is detected by

a. Heller's test b. Pandy's test
c. Gmelin test d. Sulkowitch test

131. Snoring respiration is characteristic of

a. Pneumonia
b. Heaves
c. Paralysis of larynx
d. Obstruction of nasal passage

132. Kangaroo sitting position in pigs is due to the deficiency of

a. Riboflavin b. Pantothenic acid
c. Niacin d. Biotin

133. Short jerky inspiration caused by stimulation of phrenic nerve is

a. Hiccough b. Wheeze
c. Roar d. None of the above

134. An example of anodyne expectorant is

a. Codein
b. Ammonium chloride
c. Potassium iodide
d. Camphor

135. Neonatal isoerythrolysis is caused by

a. Injection of haemolytic bacterial organism
b. Incompatible blood group reaction
c. Blood protozoan organism
d. None of the above

136. ..... is a primary skin lesion

a. Scale b. Ulcer
c. Pustule d. Cyst

137. Frequent dry cough often in paroxysms is seen in

a. Bronchopneumonia
b. Interstitial pneumonia
c. Pneumonia
d. Bronchitis

138. Peat Scours occurs in calves due to

a. Presence of sulphate in the diet
b. Lack of phosphorus in the diet
c. Deficiency of Cu in the diet
d. Lack of molybdenum in the diet

139. Thin soft skin is a characteristic feature in
a. Hypothyroidism
b. Hyperadrenocorticism
c. Hyperoestrogenism
d. Pemphigus vulgaris

140. Site of paracentesis thoracis is
a. 4-5 intercostal space
b. 6-8 intercostal space
c. 9-10 intercostal space
d. 5-6 intercostal space

141. Hepatosis dietetic in swine is caused by
a. Deficiency of Vit. E and Se
b. Feeding of high energy diet
c. Excess of unsaturated fatty acid in the diet
d. All the above

142. In selenium and Vit. E deficiency, the lesions in muscle is characterized by
a. Hyaline degeneration and ceroid deposition
b. Inflammatory reaction in the muscle tissues
c. Gangrene and necrosis of muscle tissues
d. None of the above

143. Pernicious anemia is caused by the deficiency of
a. Vit. B_1 b. Folic acid
c. Iron d. Copper

144. Atopy occurs as a result of
a. Allergy to food
b. Allergy due to inhaled antigen
c. Itching of central origin
d. Excessive secretion of sebum

145. Inflammatory reaction of epidermis for substance to which the cells are sensitized is known as
a. Dermatitis b. Allergy
c. Eczema d. Pustule

146. Secondary iodine deficiency is usually caused by
a. High Cu intake
b. Hypervitaminosis
c. High Ca intake
d. None of the above

147. Parakeratosis in swine is due to
a. Zn deficiency
b. Unsaturated fatty acid
c. Inherited factors
d. All of the above

148. Corticosteroids are contraindicated in
a. Allergic dermatitis
b. Juvenile pyoderma
c. Demodicosis
d. Nodular panniculitis

149. Sharply circumscribed raised lesions caused by dermal edema are called
a. Papule b. Wheal
c. Wart d. Macule

150. High pitched inspiratory sound indicating upper airway obstruction and audible without the aid of stethoscope is called
a. Stridor b. Stertor
c. Rales d. Wheezes

151. Cobalt deficiency in animals can be detected by
a. Estimation of Methymalonic acid
b. Estimation of Formiminoglutamic acid
c. Vit. B_{12} level in the body
d. All of the above

152. Perosis in fowl results due to deficiency of
a. Riboflavin b. Zn
c. Thiamin d. Mn

153. Consumption of raw fish by dogs results in deficiency of
a. Riboflavin b. Thiamine
c. Vit. C d. Biotin

154. Yellow fat disease in kitten is due to deficiency of
a. Vit. E b. Vit. A
c. Vit. C d. Iodine

155. Barlows disease in dogs can be treated with
a. Vit. C b. Vit. D
c. Iron d. None of the above

156. Steatorrhoea indicates dysfunction of

a. Kidney
b. Liver
c. Heart
d. Spleen

157. Myocardial affections are characterized by

a. Murmur
b. Arrhythmia
c. Anemia
d. Muffled heart sounds

158. Cardiac tamponade occur in

a. Effusive pericarditis
b. Endocarditis
c. Myocarditis
d. Dilated cardiomyopathy

159. In obstructive jaundice the colour of the faeces is

a. Brownish green
b. Tarry black
c. Dark coloured
d. Clay coloured

160. Flatulent colic in horses is a result of distension of gut with

a. Fluid
b. Gas
c. Ingesta
d. Sand

161. Partial loss of appetite is known as

a. Inappetence
b. Anorexia
c. Anaphagia
d. Dysphagia

162. Anamnesis refers to

a. Clinical diagnosia
b. Case history
c. General inspection
d. Palpation

163. Mediastinal lymphnode enlargement in cattle results in

a. Frothy bloat
b. Constipation
c. Free gas bloat
d. None of the above

164. An example of centrally acting antiemetic is

a. Sucralfate
b. Metoclopramide
c. Triple carb
d. Ice water

165. Ballotment is a combination of

a. Inspection and palpation
b. Palpation and percussion
c. Inspection and percussion
d. Percussion and auscultation

166. Epistaxis can be treated with

a. Vitamin E
b. Vitamin B1
c. Vitamin C
d. Vitamin K

167. The primary modes or causes of death include

a. Coma
b. Syncope
c. Asphyxia
d. All of the above

168. Wound produced due to sharp knife is

a. Punctured wound
b. Incised wound
c. Lacerated wound
d. Contused wound

169. Nitrates in milk indicate

a. Addition of skim milk
b. Addition of water
c. Addition of preservatives
d. Addition of sugar

170. In ante mortem wounds, there will be presence of

a. Inflammatory reaction
b. Bleeding
c. Healing
d. All the above

171. Segregation of all suspected or unvaccinated animals is termed as

a. Preventive measure
b. Separation period
c. Quarantine
d. None of the above

172. The period of quarantine for any livestock can be up to

a. 60 days
b. 20 days
c. 90 days
d. 10 days

173. Most common fixative used for preserving samples for histopathological examination is

a. Ethanol
b. Methanol
c. 50% glycerol saline
d. 10% formalin

174. Mixing of meat of different species of animals or mixing superior quality meat with inferior quality meat is termed as

a. Emulsification b. Falsification
c. Deterioration d. None of the above

175. Rapid and painless method of humane killing of animals is called

a. Maiming b. Bestiality
c. Euthanasia d. None of the above

176. Fat percentage in milk can be detected by

a. Gerber's butyrometer
b. Lactometer
c. Both a and b
d. None of the above

177. Heart sounds can be recorded using

a. Electrocardiograph b. Echocardiograph
c. Phonocardiograph d. Phonorumenograph

178. Bishoping is a method for

a. Offence against animals
b. Fraudulent sale of animals
c. Fradulent sale of livestock products
d. None of the above

179. The normal type of respiration in dogs and cats is

a. Costal b. Costo-abdominal
c. Abdominal d. All of the above

180. Pulse of an elephant is taken from

a. Middle coccygeal artery
b. External maxillary artery
c. Ear artery
d. None of the above

181. The most appropriate diagnostic equipment to detect cardiac arrhythmias in dogs is

a. ECG
b. EEG
c. Echocardiography
d. None of the above

182. The normal pH of rumen liquor in cattle is

a. 6.5-8.5 b. 4.5-5.0
c. 6.0-7.0 d. None of the above

183. In cattle the rumen motility is noted at

a. Middle of left paralumbar fossa
b. Right paralumbar fossa
c. Both a and b
d. None of the above

184. Intraoccular pressure is determined by

a. Schiotz tonometer
b. Otoscope
c. Opthalmoscope
d. Slit-lamp biomicroscope

185. Presence of blood in the last part of urination indicates bleeding from

a. Urethra b. Urinary bladder
c. Kidney d. All of the above

186. In mastitic milk, there is

a. Rise in alkalinity
b. Increase in chloride content
c. Increase in number of leukocytes
d. All of the above

187. AV block in ECG is characterized by

a. Deep Q wave
b. Prolonged R wave
c. Solitary P wave without QRS complexes
d. Occasional missing of PQRST complexes

188. The physical examination of animal which involves shaking the body to detect presence of fluid is known as

a. Palpation b. Succussion
c. Auscultation d. Mensuration

189. In cattle William's method of auscultation is used to diagnose

a. Traumatic reticulo-peritonitis
b. Vagal indigestion
c. LDA
d. RDA

190. Accumulation of fluid in the thoracic cavity is known as

a. Pneumothorax
b. Hydrothorax
c. Both a and b
d. None of the above

191. Decreased respiratory rate is termed as
a. Apnoea
b. Orthopnoea
c. Oligopnoea
d. Dyspnoea

192. Presence of undigested blood in the faeces is called
a. Haematochezia
b. Odynophagia
c. Hepatodynea
d. None of the above

193. Voiding of small quantities of faeces mixed with fresh blood and mucus indicates
a. Large bowel diarrhea
b. Small bowel diarrhea
c. Gastritis
d. None of the above

194. Water-belly condition occurs in male due to
a. Rupture of urinary bladder
b. Rupture of urethra
c. Rupture of ureter
d. None of the above

195. In cattle sodium thiosulphate is used to treat the poisoning with
a. Organophosphate
b. HCN (Cyanide)
c. Nitrate
d. None of the above

196. Blackish oral ulcers in dog denotes
a. Uraemia
b. Hypocalcaemia
c. Pericarditis
d. None of the above

197. Normal intestinal sounds are termed as
a. Resonance
b. Tympanic sound
c. Borborygmus
d. None of the above

198. In cattle, bloat can occur in association with
a. Milk fever
b. Tetanus
c. Tuberculosis
d. All of the above

199. The elevation in body temperature due to pyrogens regardless of environmental temperature is termed as
a. Fever
b. Hyperthermia
c. Heat stroke
d. None of the above

200. Fever that subsides within 24-hrs after its development is
a. Simple fever
b. Transient fever
c. Remittent fever
d. All of the above

201. Increased C.S.F pressure is suggestive of
a. Hypovitaminosis A
b. Hyperthermia
c. Gastritis
d. None of the above

202. Transient loss of consciousness due to ischemia is called
a. Syncope
b. Coma
c. Epilepsy
d. None of the above

203. The act that makes offences like beating and starving of animals punishable is
a. Prevention of cruelty to animals act
b. 420 IPC
c. Cattle cruelty act
d. Dourine act

204. Consequence of less supply of oxygen to brain leads to
a. Syncope
b. Coma
c. Epilepsy
d. Cerebral oedema

205. A chemical test used to detect the presence of seminal stains
a. Lecomalachite green test
b. Benzidine test
c. Calorie test
d. Barberio's test

206. Glycogen content of meat is highest in
a. Goat
b. Sheep
c. Cattle
d. Horse

207. Injury caused by compression or blow of a blunt weapon without loss of continuity of skin is termed as

a. Contusion
b. Abrasion
c. Laceration
d. Incision

208. An example of plasma volume expander is

a. Gelatin
b. 0.89% Normal saline
c. 2.5% Dextrose
d. Ringers lactate

209. Total loss of voluntary movement in the limb on one side of the body is called

a. Hemiplegia b. Mydriasis
c. Myoclonus d. Myotonia

210. Raw egg white injury is caused due to the deficiency of

a. Biotin b. Choline
c. Vitamin B_{12} d. Pyridoxine

211. Copper exerts its physiologic effect through

a. Ceruloplasmin
b. FEGLU
c. Methylmalonic acid
d. CPK

212. White liver disease in sheep results from deficiency of

a. Copper b. Phosphorous
c. Cobalt d. Selenium

213. Glutathione peroxidase is associated with

a. Copper b. Phosphorous
c. Cobalt d. Selenium

214. Sway back in lambs is associated with the deficiency of

a. Copper b. Phosphorous
c. Cobalt d. Selenium

215. Falling disease of cattle is considered to be associated with the deficiency of

a. Copper b. Phosphorous
c. Cobalt d. Selenium

216. Hepatosis dietetica of swine is due to the deficiency of

a. Copper
b. Phosphorous
c. Cobalt
d. Vtamin E-Selenium

217. Chastek paralysis in cats is due to the deficiency of

a. Vitamin A
b. Vitamin B_1
c. Pantothenic Acid
d. Nicotinic acid

218. Black tongue in dogs is due to deficiency of

a. Vitamin A
b. Vitamin B_1
c. Pantothenic acid
d. Nicotinic acid

219. Xeropthalmia in calves is associated with deficiency of

a. Vitamin A
b. Vitamin B_1
c. Pantothenic acid
d. Nicotinic acid

220. Omeprazole is a

a. Proton pump inhibitor
b. H_2 receptor antagonist
c. H_1 receptor antagonist
d. Cytoprotectant

221. Normal serum Magnesium level in cattle is in the range of

a. 1.7-3 mg/dl
b. 3.5-4.7 mg/dl
c. 4.7-5.9 mg/dl
d. 5.9-7.1 mg/dl

222. Normal serum calcium level in cattle is in the range of

a. 5.9-7.1 mg/dl b. 8.5-10.0 mg/dl
c. 12.0-13.5 mg/dl d. 3.5-5.0 mg/dl

223. An antagonist of copper associated with secondary copper deficiency is

a. Molybdenum b. Sodium
c. Cobalt d. Potassium

224. Primary ketosis is also called as
a. Production ketosis
b. Starvation ketosis
c. Alimentary ketosis
d. Ketosis due to nutritional deficiency

225. On Ultrasonography, clear fluid appears as
a. Anechoic
b. Hyperechoic
c. Hypoechoic
d. Isoechoic

226. Clinical finding that is not associated with large bowel diarrhea is
a. Melena
b. Dyschezia
c. Tenesmus
d. Urgency to defecate

227. Clinical finding that is not associated with small bowel diarrhea is
a. Melena
b. Increased volume
c. Variability in colour
d. Increased frequency

228. Myxedema is associated with
a. Hypothyroidism
b. Hypoadrenocorticism
c. Hyperthyroidism
d. Hyperadrenocorticism

229. Modified water deprivation test is useful in the diagnosis of
a. Diabetes insipidus
b. Hypothyroidism
c. Diabetes mellitus
d. Pancreatic insufficiency

230. Cretinism is associated with
a. Hypothyroidism
b. Hypoadrenocorticism
c. Hyperthyroidism
d. Hyperadrenocorticism

231. Serum fructosamine estimation is useful in the diagnosis of
a. Diabetes insipdus
b. Hypothyroidism
c. Diabetes mellitus
d. Pancreatic insufficiency

232. Glycosylated Haemoglobin estimation is used to diagnose
a. Diabetes insipdus
b. Hypothyroidism
c. Diabetes mellitus
d. Pancreatic insufficiency

233. 'P' pulmonale indicates
a. Increased amplitude of P wave
b. Abnormal P wave in pneumonia
c. Increased P wave duration
d. Bifid P wave

234. Most common clinical sign in congenital cardiac disease in pups is
a. Congested mucosa
b. Cyanosis of mucosa
c. Pallor of mucosa
d. Injected mucosa

235. Sinus arrhythmia is
a. Normal in aged animals
b. Abnormal in all animals
c. Normal in exercised animals
d. Normal in young animals

236. Smallest blood vessel available for clinical examination is
a. Oral blood vessels
b. Vaginal blood vessels
c. Episcleral blood vessels
d. Prepucial blood vessels

237. Systolic murmur occurs in association with
a. AV valve insufficiency and pulmonary/aortic valve stenosis
b. Pulmonary/aortic valve insufficiency or stenosis of AV valves
c. Anemia
d. Pericarditis

238. A leukemic leukemia is characterized by
a. Increased WBC count in circulation
b. Increased number of abnormal WBCs in circulation
c. Normal WBC count in circulation with tissue infiltration of leukocytes
d. Reduced number of WBCs in circulation

239. Effusive phase of traumatic pericarditis in cattle is characterized by .....on auscultation

a. Pericardial rubbing
b. Muffled heart sounds
c. Systolic murmur
d. Diastolic murmur

240. Anemia along with dehydration causes

a. Pale, moist mucus membrane
b. Pale, dry mucus membrane
c. Normal, pink mucus membrane
d. Pale, icteric mucus membrane

241. Adrenaline is contraindicated in all types of shock except

a. Cardiogenic
b. Anaphylactic
c. Hypovolemic
d. Vasogenic

242. Steely wool in sheep is caused by

a. Zinc deficiency
b. Copper deficiency
c. Cobalt deficiency
d. Selenium deficiency

243. Low milk fat syndrome in cattle is observed due to

a. Low glucose in diet
b. Low concentrate in diet
c. Low fiber in diet
d. Low calcium in diet

244. Mulberry heart diseases in pig is due to the deficiency of

a. Vit E and Selenium b. Vitamin C
c. Calcium d. Copper

245. Punched out ulcers in abomasum is pathognomonic lesion of

a. Anaplasmosis b. Babesiosis
c. Theileriosis d. Trypanosomiasis

246. Rothera's test is used to diagnose

a. Milk fever b. Ketosis
c. Acidosis d. Anemia

247. Canine pellagra (Necrotic stomatitis) is due to the deficiency of

a. Phosphorous b. Calcium
c. Niacin d. Magnesium

248. Haemoglobinuria is observed in

a. Phosphorus deficiency
b. Leptospirosis
c. Babesiosis
d. Both b and c

249. Diamond skin lesions are observed in

a. African swine fever
b. Swine flu
c. Hog cholera
d. Swine Erysipelas

250. Greasy pig disease is caused by

a. Pseudomonos aeruginosa
b. Staphylococcus hyicus
c. Pasteurella multocida
d. All of the above

251. Gold standard test for rabies is

a. ELISA b. CFT
c. MAT d. FAT

252. Microscopic agglutination test (MAT) is used for diagnosis of

a. Rinderpest b. Listeria
c. Leptospira d. ICH

253. Liptak test is used for diagnosis of

a. Traumatic pericarditis
b. Traumatic reticuloperitonitis
c. Diaphramatic hernia
d. Left displacement of abomasum

254. Tigroid myocarditis in calf is caused by

a. FMD
b. BVD
c. Staphylococcus aureus
d. All of the above

255. Lactation tetany in horses is caused by the deficiency of

a. Cu b. Ca
c. Mg d. Zn

256. Minimata and Niigata disease is caused by the toxicity of

a. Mercury b. Arsenic
c. Copper d. Fluoride

257. Gall sickness condition is caused by

a. Theileriosis
b. Babesiosis
c. Anaplasmosis
d. Trypanosomiasis

258. Etiology for Mad cow disease is

a. Prion b. Algae
c. Virus d. Fungi

259. East coast fever is caused by

a. Theileria parva
b. Theileria annulata
c. Anaplasma
d. Babesia bovis

260. Which of the following animal can vomits only through nostril

a. Buffalo b. Horse
c. Dog d. Pig

261. Example for selective irreversible COX-2 inhibitor

a. Diclofenac sodium b. Mefenamic acid
c. Nimesulide d. Meloxicam

262. Which anti-inflammatory drug is banned for its use in animals

a. Diclofenac sodium b. Mefenamic acid
c. Nimesulide d. Meloxicam

263. Which of the following is a fourth generation cephalosporin

a. Ceftriaxone b. Cefaclor
c. Cafepime d. Cefuroxime

264. For which disease calf hood vaccination is advisable

a. Salmonellosis
b. Brucellosis
c. Pasteurellosis
d. Neonatal calf diarrhea

265. Paralysis of hind quarter is called as

a. Paraplegia b. Qudriplegia
c. Hemiplegia d. Dipliplegia

266. Which one of the following has immunostimulant property

a. Morental
b. Levamisol HCL
c. Hygomycin B
d. Disopheno

267. Cats are more susceptible to NSAID toxicity as they are deficient in

a. Glucuronyl transferase
b. Glutathione transferase
c. Phosphodiesterase
d. Acetyl cholinesterase

268. Demodectic mange can be controlled by

a. Fenbendazole b. Albendazole
c. Metronidazole d. Ivermectin

269. Anal pruritis in dogs is associated with

a. Dipylidium caninum
b. Toxocara canis
c. Ancylostoma caninum
d. Diphyllobothrium latum

270. Diuretic recommended in cerebral oedema is

a. Frusemide b. Mannitol
c. Acetazolamide d. Amiloride

271. Toxic shock syndrome is caused by

a. Streptococcus lactis
b. Streptococcus thermophilus
c. Staphyloccus aureus
d. All of the above

272. Photosensitisation can occur due to feeding of

a. Nerium b. Amaranthus
c. Lantana d. Abrus

273. White side test is used for diagnosis of

a. Leptospirosis b. Mastitis/ Metritis
c. Anthrax d. Brucellosis

274. Tamoxifen is an antiestrogen used mainly in the treatment of

a. Mammary gland carcinoma in bitches
b. Horn cancer in bullocks
c. Reduced libido in males
d. None of the above

275. Drug of choice against babesiosis is

a. Buparvaquone
b. Diminazene aceturate
c. Oxytetracycline
d. Omeprazole

276. A male dog urinates like a female dog in

a. Orchitis b. Cystitis
c. Urethritis d. Gastritis

277. Condition characterized by increased rate of respiration with reduction in depth is called

a. Polypnoea b. Hypopnoea
c. Oligopnoea d. Apnoea

278. Drug which is contraindicated for Collie breed of dog is

a. Levamisole b. Ivermectin
c. metronidazole d. Tamoxifen citrate

279. Drug of choice for mycoplasmosis is

a. Enrofloxacin b. Doxycycline
c. Flunixin meglumine d. Tylosin

280. Drug of choice against Theileriosis is

a. Oxytetracycline
b. Diminazene aceturate
c. Buparvaquone
d. Amprolium

281. An anticoccidial drug used in poultry is

a. Acriflavin b. Amprolium
c. Tylosin d. Both a and b

282. Which of the following is not a major pathogen of mastitis?

a. Staphylococus Hyicus
b. Staphylococcus aureus
c. Streptococcus agalactia
d. E-coli

283. Summer mastitis is caused by

a. Staphylococus hyicus
b. Staphylococcus aureus
c. Streptococcus agalactia
d. E-coli

284. Enrofloxacin is not used to treat bacterial infections in young animals because of

a. Ototoxicity b. Nephrotoxicity
c. Chondrotoxicity d. Neurotoxicity

285. Infection of ..... leads to deficiency of Vit-B

a. Dipylidium caninum
b. Haemonchus contortus
c. Ancylostoma caninum
d. Diphyllobothrium latum

286. ..... is usually contraindicated in ventricular tachycardia in dog

a. Lidocaine b. Atropine
c. Digoxin d. Verapamil

287. Calcium channel blocker used to treat hypertrophic cardiomyopathy in cat is

a. Lidocaine b. Diltiazem
c. Digoxin d. Propranolol

288. Most common intraocular tumor in dogs is

a. Melanoma
b. Squamous cell carcinoma
c. Astrocytoma
d. Mast cell tumor

289. Dilated cardiomyopathy in cats is most commonly related with dietary deficiency of

a. Carnitine b. Taurine
c. Guanine d. Selenium

290. Praying posture in dog is observed in

a. Gastritis b. Cystitis
c. Orchitis d. Laminitis

291. Term used for eating of own infants is called as

a. Geophagia b. Pilophagia
c. Infantophagia d. Coprophagia

292. Hacking cough is observed in

a. Bronchopneumonia
b. Interstitial pneumonia
c. Lobular pneumonia
d. Parasitic pneumonia

293. A cow stands in arched back condition in

a. Gastritis
b. Cystitis
c. Peritonitis
d. Pancreatitis

294. A condition in which cow sits on sternum and rests its head on the flank region is

a. Ketosis
b. Milk fever
c. Eclampsia
d. Monday morning sickness

295. In sheep circling movement is seen in

a. Listeriosis
b. Coenurus cerebralis infection
c. Otitis
d. All of the above

296. Semisolid clay coloured faeces with undigested food materials indicates

a. Pancreatitis b. Gastritis
c. Enteritis d. Hepatitis

297. Atropine test is used use for the diagnosis of

a. Tympany
b. Vagal indigestion
c. Ruminal acidosis
d. Simple indigestion

298. Accumulation of fluid in the peritoneal cavity is called

a. Anasarca b. Ascites
c. Hydrothorax d. Hydronephrosis

299. Kennel cough condition in dogs is characterized by

a. Infectious rhinitis
b. Infectious rhinotracheitis
c. Infectious tracheobronchitis
d. All of the above

300. Frog like posture in buffaloes is observed in

a. Hypocalcaemia
b. Bilateral hip dysplasia
c. Luxation of left hip joint
d. All of the above

301. Fever associated with high rise in temperature is accompanied with strong bounding pulse

a. Periodic fever b. Sthenic fever
c. Asthenic fever d. Transient fever

302. In dog and cat pulse can be recorded by

a. Facial artery
b. Median artery
c. Femoral artery
d. Middle coccygeal artery

303. Increased rate of respiration with reduction in depth is known as

a. Hyperpnoea b. Polypnoea
c. Oligopnoea d. Apnoea

304. Biot's respiration is observed in

a. Meningitis
b. Encephalitis
c. Medullary lesion
d. All of the above

305. Breathing characterized by several short breaths alternating with periods of apnea is called

a. Kaussmal's respiration
b. Biot's respiration
c. Cheyne stokes respiration
d. All of the above

306. Cattle exhibits ..... type of respiration

a. Abdominal b. Thoracic
c. Costal d. Costo-abdominal

307. Shock developed during injection of antigen to which animal is previously sensitized is called

a. Vasogenic shock
b. Septic shock
c. Anaphylactic shock
d. Neurogenic shock

308..... should be administered during hypovolaemic shock

a. Dextran b. Pitressin
c. Betamethasone d. Pheniramine maleate

309. Coughing up of blood is termed as

a. Haematemesis b. Epistaxsis
c. Metrorrhagia d. Haemoptysis

310. Which one of the following is a rate limiting step in adrenaline synthesis?

a. Tyrosine to DOPA
b. DOPA to Dopamine
c. Dopamine to Nor-adrenaline
d. None of the above

311. Which of the following drugs is used in treating digitalis arrhythmia?

a. Lignocaine b. Quinidine
c. Procainamide d. None of the above

312. Knott's technique is a concentration method for detection of following parasite in blood

a. Trichomonas spp.
b. Trypanosoma evansi
c. Microfilariae
d. All of the above

313. Rivalta's test is used for the diagnosis of

a. Feline infectious peritonitis
b. Feline enteric corona virus infection
c. Feline corona virus infection
d. Canine parainfluenza virus

314. pH of urine in horse is

a. Acidic b. Basic
c. Neutral d. Depend on exercise

315. In acute cystitis the odour of urine is

a. Sweet b. Sour
c. Strong ammoniacal d. Normal

316. Pregnancy Toxemia occurs in ewes during

a. Early pregnancy
b. Mid pregnancy
c. After parturition
d. Last month of pregnancy

317. Jugular pulse is an important feature of the

a. Congestive heart failure
b. Acute heart failure
c. Milk fever
d. Traumatic reticulo – peritonitis

318. Sour smell of rumen fluid is characteristics of

a. Acidosis b. Alkalosis
c. Simple indigestion d. Vagus indigestion

319. Eclampsia is milk fever occurs in

a. Cow b. Eve
c. Sow d. Bitch

320. Ketosis may occur due to deficiency of

a. Vitamin B1 b. Vitamin B2
c. Vitamin B12 d. Vitamin B5

321. Osteodystrophic fibrosa may result due to excessive dietary intake of

a. Ca b. Mg
c. P d. Cu

322. Half chewed food in mouth is characteristic of death due to

a. Drowning
b. Lightening stroke
c. Electrocution
d. All of the above

323. Specific antidote for amitraz poisoning is

a. Atipamezole
b. Yohimbine
c. Atrophine sulphate
d. Diminazene aceturate

324. In pleurisy there is

a. Expiratory dyspnea
b. Inspiratory dyspnea
c. Apnoea
d. Both a and b

325. Bestiality is punishable under which section of IPC

a. 93 b. 377
c. 415 d. 429

326. Calcium versenate acts as antidote in

a. Pb poisoning
b. As poisoning
c. Cyanide poisoning
d. Ca poisoning

327. Parturient paresis mostly occurs in

a. Advance pregnancy
b. First 48 hrs of parturition
c. 10-25 days of parturition
d. 1 month after parturition

328. Chronic recurrent tympany is characterized of

a. TRP
b. Diaphragmatic Hernia
c. Rumen overload
d. Vagus indigestion

329. Ketosis in heavily fed high producing cows is known as

a. Estate acetonenia
b. Bovine cetosis
c. Feed acetonemia
d. Lactacidosis

330. Rothera's test is more sensitive for estimation of

a. Acetoacetate
b. Acetone
c. β-hydroxy butyric acid
d. All of the above

331. Grass staggers occurs due to deficiency of

a. Mg b. Ca
c. Zn d. Cu

332. Prolonged P wave occurs in

a. Left atrial enlargement
b. Left ventricular enlargement
c. Right ventricular enlargement
d. Right atrial enlargement

333. The deflection produced by ventricular repolarisation is represented by

a. Q wave b. R wave
c. S wave d. T wave

334. QRS complex of ECG indicates

a. Ventricular repolarisation
b. Ventricular depolarization
c. Atrial repolarisation
d. Atrial depolarisation

335. Tall R wave in lead II indicates enlargement of

a. Right atrium
b. Left atrium
c. Right ventricle
d. Left ventricle

336. The second heart sound (DUBB) is associated with closure of

a. Semilunar valves
b. Tricuspid valve
c. Bicuspid valve
d. Tricuspid and Bicuspid valve

337. The first heart sound (LUBB) is associated with closure of

a. Atrioventricular valves
b. Semilunar valves
c. Pulmonary valve
d. Aortic valve

338. In buffalo secondary bloat is also known as

a. Frothy bloat b. Free gas bloat
c. Feed lot bloat d. Pasture bloat

339. In cattle slab sided left abdomen is indicative of

a. Left displacement of abomasums
b. Traumatic pericarditis
c. Frothy bloat
d. Rumen impaction

340. Which of the following is a crystalloid

a. Ringer lactate b. Hetastarch
c. Haemaccel d. Dextran

341. Example for crystalloid solution is

a. Ringer lactate
b. Dextrose
c. Glucose solution
d. All of the above

342. Carbamate poisoning in dog is best treated with

a. Sodium bicarbonate
b. Methylene blue
c. Dimercaprol
d. Atropine sulphate

343. Prostaglandin associated with initiation of fever is

a. PGC_2 b. PGF_2
c. PGI_2 d. PGE_2

344. Which breed of dog is more prone for urate calculi

a. Dalmatian b. German shepherd
c. Collie d. Beagle dog

345. In dog most common site for urinary calculi is

a. Kidney b. Bladder
c. Ureter d. Urethra

346. The incidence of arrythmogenic right ventricular cardiomyopathy is more common in

a. German shepherd b. Dalmation
c. Boxer d. Labrador

347. Which of the following drugs is contraindicated in pseudopregnant bitches because it stimulate the milk synthesis

a. Acepromazine
b. Metoclopramide
c. Domperidone
d. All of the above

348. Cataract in case of diabetes mellitus in dog is due to the lenticular accumulation of

a. Glucose b. Glycogen
c. Sorbitol d. Citrate

349. In dogs dilated cardiomyopathy occurs due to deficiency of

a. Carnitine
b. Taurine
c. Co-enzyme Q10
d. All of the above

350. Drug contraindicated in cats is

a. Cyclosporine b. Prednisolone
c. Chlorambucil d. Azathioprine

351. If a animal shows tragic facial expressions it might be a case of

a. Hypothyroidism b. Diabetes insipidus
c. Acromegaly d. Diabetes mellitus

352. In dog presence of temporal muscle twitching indicates a case of

a. Canine distemper
b. Rabies
c. Infectious canine hepatitis
d. Diabetes

353. Feeding of raw fish regularly in the diet may cause ..... deficiency in cata

a. Niacin b. Pantothenic acid
c. Calcium d. Thiamine

354. In case of cyanide poisoning death is due to

a. Histotoxic anoxia
b. Anoxic anoxia
c. Anaemic anoxia
d. Stagnant anoxia

355. Normal pH of mammalian blood is

a. 7.35-7.45 b. 6.65-7.25
c. 8.15-8.35 d. 7.85-8.25

356. pH of normal milk is

a. 5.6-6.3 b. 7.3-7.8
c. 6.6-6.8 d. 8.5-9.2

357. Normal pH range of rumen fluid varies from

a. 6.2-7.2 b. 7.0-7.4
c. 8.15-8.35 d. 8.5-9.2

358. Heinz body is normally seen in

a. Donkey b. Horse
c. Cat d. Camel

359. In horse normal respiration rate is

a. 10-30/min b. 8-16/min
c. 25-35/min d. 10-20/min

360. Most common acquired valvular defect in horses is

a. Aortic valve stenosis
b. Aortic valve insufficiency
c. Left AV valve insufficiency
d. Right AV valve insufficiency

361. Thickening of all skin layers including subcutaneous tissue is known as

a. Hyperkeratosis
b. Pachyderma
c. Parakeratosis
d. Pityriasis

362. In dog, L-carnitine deficiency can cause

a. Mitral valve insufficiency
b. Dilated cardiomyopathy
c. Aortic valve insufficiency
d. All of the above

363. In dog long term administration of sulfonamide results in

a. Lupus erythematosus
b. Cutaneous vasculitis
c. Keratoconjunctivitis sicca
d. Pyoderma

364. In case of piglet ..... type of anaemia is observed due to iron deficiency

a. Microcytic normochromic
b. Macrocytic normochromic
c. Microcytic hypochromic
d. All of the above

365. Obstruction is frequently observed in cervical part of the oesophagus in

a. Horse
b. Cattle
c. Buffalo
d. All of the above

366. Kennel cough in dog is primarily caused by

a. Bordetella bronchoseptica
b. Staphylococcus aureus
c. Pasteurella multocida
d. All of the above

367. Accumulation of blood in the pleural sac is called as

a. Heamothorax
b. Hydrothorax
c. Pneumothorax
d. Pyothorax

368. Which of following test is carried out to detect the presence of bile pigment

a. Gmelin's test
b. Rothera's test
c. Robert's test
d. Benedict's test

369. The term used for loss of function affecting one side of the body is called

a. Paraplegia
b. Qudriplegia
c. Hemiplegia
d. Dipliplegia

370. Dropped elbow condition is observed due to the damage of

a. Femoral nerve
b. Radial nerve
c. Sciatic nerve
d. Obturator nerve

371. Knuckling of fetlock is observed due to the damage of

a. Supra scapular nerve
b. Tibial nerve
c. Peroneal nerve
d. Sciatic nerve

372. Which of the nerve get damage while forceful handling of dystocia in bovine

a. Obturator nerve
b. Femoral nerve
c. Coccygeal nerve
d. Ilio-hypogastric nerve

373. Feline leprosy is caused by

a. Mycobacterium tuberculosis
b. Mycobacterium lepraemurium
c. Mycobacterium cheloni
d. Mycobacterium fortuitum

374. *Toxocara canis* causes

a. Visceral larval migrans
b. Cutaneous larval migrans
c. Large bowel diarrhea
d. All of the above

375. Standard treatment for Ehrlichiosis is

a. Doxycycline 10 mg/kg
b. Tetracycline 22 mg/kg
c. Oxytetracycline 25 mg/kg
d. Minocycline 10 mg/kg

376. Virus involved in feline upper respiratory infection complex
a. Feline herpes virus
b. Feline reo virus
c. Feline picorna virus
d. All the above

377. Host that can complete coccidian life cycle of T. gondii is
a. Cat b. Dog
c. Human d. All the above

378. High risk breeds for babesiosis is
a. Grey hound
b. American pit bull terrier
c. Both a and b
d. None of the above

379. Anaemia encountered in Ancylostomiasis is
a. Microcytic
b. Macrocytic
c. Normocytic
d. None of the above

380. Blood picture in canine Ehrlichiosis
a. Morula in neutrophil
b. Morula in monocyte
c. Morula in lymphocyte
d. Morula in RBC

381. Oral recommended dose of Vitamin A in deficient cat is
a. 625 to 800 IU/kg
b. 200 to 300 IU/kg
c. 100 to 200 IU/kg
d. None of the above

382. Oral recommended dose of Vitamin D3 in deficient cat is
a. 0.25µg/kg b. 0.25 g/kg
c. 0.25 mg/kg d. 0.52 µg/kg

383. ..... is the best documented and most generally used therapy for chronic hepatitis
a. Antibiotic therapy
b. Anti inflammatory therapy
c. Steroid therapy
d. None of the above

384. The ketone body which does not react with sodium nitroprusside is
a. Acetone
b. Acetoacetate
c. β-OH-butyric acid
d. All of the above

385. Treatment with synthetic T_3 is not routinely recommended because
a. Short half life
b. Thrice daily administration
c. Iatrogenic hyperthyroidism
d. All of the above

386. T_4 concentration in healthy dog is
a. 1.5-35µg/dl b. 1.5-3.5 ng/dl
c. 1.0-3.5 mg/dl d. 10-70µg/dl

387. Dose of intermediate acting insulin (NPH, Lenti) is
a. 0.25 IU/kg BID b. 0.75 IU/kg BID
c. 10 IU/kg OD d. 10 IU/kg BID

388. Chronic complications of diabetes mellitus include
a. Cataract b. Neuropathy
c. Nephropathy d. All of the above

389. Hyperkeratosis and cutaneous pustules are noticed in
a. Canine herpes virus infection
b. Canine parvo viral enteritis
c. Canine distemper
d. Lyme disease

390. Calcineurin inhibitor currently used in canine atopic dermatitis is
a. Cyclosporine
b. Cyclophosphamide
c. Tacrolimus
d. Chlorambucil

391. Spinose ear tick of dog is
a. Otobius megnini
b. Otodectes cynotis
c. Trichodectes canis
d. Felicolasp

392. Organoarsenic preparation used in canine heart worn infection is

a. Melarsomine
b. Selamectin
c. Milbemycin
d. None of the above

393. β blocker are classified under

a. Class I anti-arrythmic drugs
b. Class II anti-arrythmic drugs
c. Class III anti-arrythmic drugs
d. Class IV anti-arrythmic drugs

394. Pole/Bamboo test is performed to diagnose

a. Traumatic Reticuloperitonitis
b. Diaphragmatic hernia
c. Vagal indigestion
d. Intussusception

395. Dosage of fenbendazole for canine hookworm is

a. 7.5 mg/Kg Single dose
b. 50 mg/Kg for 3 days
c. 50 mg/Kg Single dose
d. 7.5 mg/Kg for 3 days

396. Coggin's test is used for diagnosis of

a. African horse sickness
b. Equine viral arteritis
c. Equine infectious anaemia
d. Equine influenza

397. Glasser's disease is caused by

a. Corynebacterium
b. Pasteurella multocida
c. Haemophilus
d. Streptococcus thermophilus

398. Saddle back fever curve is characteristic feature of

a. Infectious canine hepatitis
b. Canine Leptospirosis
c. Canine distemper
d. Parvovirus infection

399. Pyoderma in dog is primarily caused by

a. Pseudomonas aeuroginosa
b. Staphylococcus aureus
c. Streptococcus thermophilus
d. Staphylococcus pseudointermedius

400. Example for an angiotensin- converting enzyme inhibitor (ACE inhibitor)

a. Verapamil
b. Digoxin
c. Nitroglycerin
d. Enalapril

401..... Combination may elevate the level of serum potassium

a. Verapamil and Digoxin
b. Enalapril and Furosemide
c. Enalapril and digoxin
d. Enalapril and spironolactone

402. Dogs with chronic heart failure generally exhibits

a. Increased serum aldosterone level
b. Increased serum renin level
c. Increased serum insulin level
d. Increased serum dobutamine level

403. Secondary photosensitization is caused by

a. Lantadene
b. Thiaminase
c. Abrin
d. Atropinase

404. Antidote for cardiac arrhythmia associated with calcium injection is

a. Atropine sulphate
b. Neostigmine
c. Oxytocin
d. Adrenaline

405..... is a specific diagnostic enzyme for downer cow syndrome

a. GGT
b. SGOT
c. CPK
d. ALP

406..... rich diet increase the chance of development of milk fever

a. Sodium
b. Potassium
c. Sulphur
d. Both a and b

407..... rich diet decrease the chance of development of milk fever

a. Chloride
b. Sulphur
c. Potassium
d. Both a and b

408. Etiology for downer cow syndrome in bovine is

a. Persistant hypocalcemia
b. Hypokalaemia
c. Obturator nerve paralysis
d. All of the above

409. Stiff lamb disease is caused by deficiency of
a. Selenium
b. Copper
c. Zinc
d. Phosphorus

410. Cushing syndrome in dog is associated with
a. Hypothyroidism
b. Hyperthyroidism
c. Hyperadrenocorticism
d. Hypoadrenocorticism

411. Addison's disease in dog is associated with
a. Hypothyroidism
b. Hypoadrenocorticism
c. Hyperadrenocorticism
d. Hyperthyroidism

412. Baby pig disease is associated with
a. Hypocalcaemia
b. Hypomagnesaemia
c. Hypothyroidism
d. Hypoglycemia

413. Producing false evidence is punishable under section
a. IPC 162 b. IPC 163
c. IPC 192 d. IPC 193

414. Issuing or singing false evidence is punishable under section
a. IPC 197 b. IPC 176
c. IPC 420 d. IPC 423

415. Adulteration of food or drink meant for sale is punishable under section
a. IPC 272 b. IPC 176
c. IPC 420 d. IPC 423

416. Adulteration of drugs is punishable under section
a. IPC 274 b. IPC 176
c. IPC 420 d. IPC 423

417. Mischief causing damage to animals is punishable under section
a. IPC 420 b. IPC 427
c. IPC 428 d. IPC 429

418. Mischief by killing or maiming animals is punishable under section
a. IPC 427 b. IPC 428
c. IPC 429 d. Both b and c

419. Bishoping is punishable under section
a. IPC 420 b. IPC 427
c. IPC 429 d. IPC 430

420. Gonioscopy is a diagnostic technique used to examine the
a. Retina
b. Eyelids
c. Pupil
d. Corneal lens

421. A condition which is associated with a diastolic murmur is
a. Aortic valve insufficiency
b. Mitral valve insufficiency
c. Tricuspid valve insufficiency
d. Pulmonary stenosis

422. Corticosteroid therapy is contraindicated in
a. Cataracts b. Glaucoma
c. Corneal ulcer d. Iritis

423. Dilated and nonresponsive pupil is a clinical sign of
a. Cataracts
b. Glaucoma
c. Episcleritis
d. Iritis

424. Dog had, a loud harsh sound with absence of pulmonary edema it is likely to be
a. Pneumonia
b. Congestive heart failure
c. Tracheobronchitis
d. Laryngeal paralysis

425. Which of the dog breeds are more predispose to subaortic stenosis
a. German shepherd
b. Boxer
c. Golden retrievers
d. All of the above

426. Drug indicated for the treatment of dilated cardiomyopathy and mitral valve insufficiency in dog to prolong the life is

a. Digoxin
b. Furosemide
c. Enalapril
d. Diltiazem

427. Most common eyelid tumor in cat is

a. Squamous cell carcinoma
b. Melanoma
c. Fibrosarcoma
d. Mast cell tumor

428. Cardinal sign of nyctalopia in dogs is

a. Cataracts
b. Progressive retinal atrophy
c. Glaucoma
d. Retinal displacement

Answer Sheet

1. a	2. b	3. b	4. c	5. c	6. c	7. c	8. d	9. c	10. b
11. d	12. d	13. a	14. c	15. b	16. a	17. c	18. c	19. b	20. c
21. b	22. b	23. b	24. a	25. d	26. c	27. d	28. a	29. c	30. c
31. b	32. c	33. a	34. d	35. c	36. c	37. d	38. a	39. c	40. d
41. d	42. a	43. a	44. c	45. b	46. c	47. d	48. c	49. a	50. d
51. d	52. c	53. c	54. a	55. c	56. a	57. b	58. b	59. d	60. c
61. d	62. b	63. b	64. a	65. b	66. b	67. a	68. a	69. b	70. a
71. a	72. a	73. b	74. c	75. b	76. a	77. c	78. c	79. b	80. a
81. b	82. d	83. d	84. d	85. a	86. b	87. d	88. c	89. b	90. b
91. b	92. a	93. a	94. a	95. a	96. c	97. c	98. b	99. b	100. b
101. d	102. c	103. c	104. c	105. c	106. b	107. b	108. b	109. b	110. c
111. a	112. b	113. c	114. d	115. b	116. b	117. a	118. a	119. a	120. a
121. b	122. a	123. a	124. b	125. b	126. d	127. b	128. d	129. a	130. b
131. d	132. d	133. a	134. a	135. b	136. c	137. d	138. c	139. b	140. b
141. a	142. a	143. b	144. b	145. b	146. c	147. a	148. c	149. a	150. a
151. d	152. d	153. b	154. a	155. a	156. b	157. b	158. a	159. d	160. b
161. a	162. b	163. c	164. b	165. b	166. d	167. d	168. b	169. b	170. d
171. c	172. c	173. d	174. b	175. c	176. a	177. c	178. b	179. a	180. c
181. a	182. c	183. a	184. a	185. b	186. d	187. c	188. b	189. a	190. b
191. c	192. a	193. a	194. a	195. b	196. a	197. c	198. d	199. a	200. b
201. a	202. a	203. a	204. a	205. d	206. d	207. a	208. a	209. a	210. a
211. a	212. c	213. d	214. a	215. a	216. d	217. b	218. d	219. a	220. a
221. a	222. b	223. a	224. a	225. a	226. a	227. d	228. a	229. a	230. a
231. c	232. c	233. a	234. b	235. c	236. c	237. a	238. c	239. b	240. c
241. b	242. b	243. c	244. a	245. c	246. b	247. c	248. d	249. d	250. b
251. d	252. c	253. d	254. a	255. b	256. a	257. c	258. a	259. a	260. b
261. c	262. a	263. c	264. b	265. a	266. b	267. a	268. d	269. a	270. b
271. c	272. c	273. b	274. a	275. b	276. b	277. a	278. b	279. d	280. c
281. b	282. a	283. d	284. c	285. d	286. a	287. b	288. a	289. b	290. a
291. c	292. b	293. c	294. b	295. d	296. a	297. b	298. b	299. c	300. b
301. b	302. c	303. b	304. d	305. b	306. a	307. c	308. a	309. d	310. a
311. a	312. c	313. a	314. b	315. c	316. d	317. d	318. a	319. d	320. c

321. c	322. c	323. a	324. d	325. b	326. a	327. b	328. b	329. a	330. a
331. a	332. a	333. d	334. b	335. d	336. a	337. a	338. b	339. a	340. a
341. d	342. d	343. d	344. a	345. d	346. c	347. d	348. c	349. d	350. d
351. a	352. a	353. d	354. a	355. b	356. c	357. a	358. c	359. b	360. b
361. b	362. b	363. c	364. c	365. d	366. a	367. a	368. a	369. c	370. b
371. c	372. a	373. b	374. a	375. a	376. d	377. a	378. c	379. a	380. b
381. a	382. a	383. c	384. c	385. d	386. a	387. a	388. d	389. c	390. c
391. a	392. a	393. b	394. a	395. b	396. c	397. c	398. a	399. d	400. d
401. d	402. a	403. a	404. a	405. c	406. d	407. d	408. d	409. a	410. c
411. b	412. d	413. d	414. a	415. a	416. a	417. b	418. c	419. a	420. d
421. a	422. c	423. b	424. d	425. d	426. c	427. a	428. b		

Unit - 10

Mock Tests and State PSC Papers

Mock Test - 1

1. A foetal monster characterized by lateral curvature of spine

a. Campylorachis scoliosa
b. Perosomus elumbis
c. Perosomus horridus
d. Schistosomus reflexes

2. Torsion of uterus is most commonly observed in

a. Mare b. Cow
c. Buffalo d. Ewe

3. Mid cycle heat in cows is diagnosed by rectal examination by the presence of

a. Well developed follicle
b. Functional corpus luteum
c. Regressing corpus luteum
d. Corpus albicans

4. In which period of estrous cycle the vaginal bleeding is seen in bitch

a. Proestrus
b. Estrus
c. Diestrus
d. Metestrus

5. Cup shaped uterine caruncles are present in

a. Cow b. Bitch
c. Mare d. Ewe

6. Ligament of the pelvis which is relaxed during parturition is

a. Pubofemoral ligament
b. Round ligament
c. Sacroischiatic ligament
d. None of the above

7. Body of the prostate gland is absent in

a. Ox b. Goat
c. Pig d. Dog

8. A condition in which the extended penis cannot be withdrawn into preputial sheath is

a. Paraphimosis
b. Phimosis
c. Rainbow penis
d. Balanitis

9. Sub urethral diverticulum is found in

a. Kidney
b. Urinary bladder
c. Urethra
d. Uterus

10. The period of embryo in cow is

a. 0-12 days of gestation
b. 12-45 days of gestation
c. 12-55 days of gestation
d. 11-35 days of gestation

11. Pseudopregnancy incidence is more in

a. Cow b. Doe
c. Ewe d. Bitch

12. Expulsion of dead fetus after full length of gestation is termed as

a. Abortion
b. Still birth
c. Premature birth
d. Over mature birth

13. Maternal recognition of pregnancy in mare occurs at

a. 15-18 days b. 10-12 days
c. 12-14 days d. 18-20 days

14. Pregnancy recognition factor in case of cow is

a. Estradiol b. Estrogens
c. bIFN t d. oIFN t

15. Ventral deviation of the head is seen in

a. Breech presentation
b. Transverse presentation
c. Vertex presentation
d. dog sitting posture

16. Hatching of Blasocyst from zona pellucida in cow occurs at

a. Between 7-8 days
b. Between 4-5 days
c. Between 10-12 days
d. Between 9-10 days

17. Cuboni test is highly accurate in mare when applied in between

a. 40-120 days of gestation
b. 17-21 days of gestation
c. 120-270 days of gestation
d. 150-300 days of gestation

18. Follicular fluid is rich in

a. Progesterone b. Estrogen
c. Relaxin d. Inhibin

19. Haematic form of mummification seen in

a. Cattle b. Horse
c. Dog d. Cat

20. Chorion develops from cells of

a. Trophoblast b. Inner cells
c. Embryoblast d. Blasocoele

21. The intra-tubular non-germ cells are

a. Spermatogonia b. Sertoli cells
c. Leydig cells d. Spermatids

22. Ephedrine is

a. An alkaloid
b. Bronchodilator
c. CNS stimulant
d. All of the above

23. In which species, histamine produces uterine relaxation?

a. Monkey
b. Rat
c. Guinea pig
d. None of the above

24. The combination of drugs which causes pharmacological antagonism

a. Histamine & Epinephrine
b. Heparine & Protamine
c. Histamine & Pheniramine maleate
d. None of the above

25. The more water soluble drugs accumulate in

a. Brain b. Liver & kidney
c. Serum or plasma d. Bones

26. The principal targets of drug actions are

a. Enzymes b. Ion channel
c. Receptors d. All of the above

27. A suicide inhibitor of Beta lactamase is

a. Aztreonam
b. Imipenem
c. Clavulanic acid
d. Cloxacillin

28. Muscarinic effects of acetycholine include all of the following except-

a. Flushing of face
b. Hypersecretion of saliva
c. Hypermotility of gut
d. Increased blood pressure

29. Hyperpigmentation & alopecia are the typical adverse signs of

a. Bleomycin b. Cyclophospomide
c. Donorubicin d. All of these

30. The duration of action for methacholine is longer than that of acetycholine because

a. Ach is inactivated by active transport into schwan cell
b. Acetylcholine is inactivated by active transport into nerve cell
c. Ach is excreated more rapidly
d. Acetylcholine is metabolized more rapidly

31. The rate limiting step in the synthesis of epinephrine is

a. Phenylalanine to Tyrosine – hydroxylation
b. Tyrosine to DOPA – Tyrosine hydroxylase
c. DOPA to Dopamine – Acid decarboxylation
d. Dopamine to norepinephrine – N-Methyltransferase

32. The most effective drug combination for tuberculosis is

a. Aminosalicylic acid and Cycloserine
b. Isoniazid and rifampin
c. Pyrazinamide and ethionamide
d. Streptomycin and ethambutol

33. In the treatment of cardiac shock, the drug of choice is

a. Dopamine b. Phenoxybenzamine
c. Metraminol d. Propranolol

34. Bulk purgatives act by

a. Decreasing the volume and increasing the viscosity of intestinal contents
b. Decreasing the volume and lowering the viscosity of intestinal contents
c. Increasing the volumes and lowering the viscosity of intestinal contents
d. Increasing the volume and increasing the viscosity of intestinal contents

35. The drug of choice in the treatment of bronchial asthma is

a. Selective $beta_1$ agonist
b. Selective $beta_2$ antagonist
c. Selective $beta_2$ agonist
d. Selective $beta_1$ antagonist

36. Tetrodotoxin is a compound

a. Selectively blocks the Ach break-down
b. Selectively blocks the cholinergic receptors
c. Selectively blocks the axonal conduction
d. Selectively blocks the re-uptake of Ach

37. Therapeutic effect of ketoconazole antagonized by

a. Candidicin b. Amphotericin
c. Nystatin d. Griseofulvin

38. A parasympathomimetic drug causes

a. Miosis, bradycardia, & bronchodilation
b. Miosis, bradycardia & bronchoconstriction
c. Miosis tachycardia & brochoconstriction
d. Mydriasis, bradycardia & bronchoconstriction

39. Hexamethonium blocks the action of cholinergic drug at

a. Azonal transmission
b. Antonomic ganglia
c. Muscarinic receptor site
d. Neuromuscular junction

40. The drug that is preferred for the treatment of post partum hemorrhage

a. Bromocriptine b. Ergonovine
c. Cloprostenol d. Oxytocin

41. In which organs both alpha and beta adrenergic stimulation produce the same effect

a. Blood vessels b. Intestine
c. Uterus d. Bronchial muscles

42. "Rose budding" is a toxic effect in pigs is produced by

a. Erythromycin
b. Chloramphenicol
c. Tylosin
d. Spiramycin

43. Antagonist

a. Have a high efficacy
b. Have a zero efficacy
c. Have both intrinsic activity and affinity
d. Have an intermediate efficacy

44. High dietary fat intake enhances oral absorption of

a. Cuprimycin b. Griseofulvin
c. Ketconazole d. Tolnaftate

45. Choline esterase reactivators are useful in the poisoning of

a. Carbamates b. Organochlorines
c. Organophosphates d. Pyrethroids

46. The suture pattern used for suturing abomasal wound is

a. Cushing suture b. Lembert suture
c. Connell suture d. Halstead suture

47. A non-ionic contrast medium used for myelography

a. Trazograph b. Omnipaque
c. Hypaque d. Sod. Iopodate

48. Most ideal parenteral fluid of choice for treatment in burn

a. Dextrose saline
b. Plasma
c. Polyionic isotonic saline
d. Blood

49. In male dogs, the common site of lodging of urethral calculi is

a. Bladder neck
b. At the level of ischial arch
c. Just behind the level of os penis
d. At the pelvic urethra

50. In buck, urethral calculi are usually lodged at the

a. Urethral process b. Ischial urethra
c. Bladder neck d. Sigmoid flexure

51. Shoe boil is a condition of horse, affecting the

a. Point of elbow
b. Posterior hock region
c. Anterior knee region
d. Anterior stifle region

52. Synovitis of great sesamodean sheath is called as

a. Navicular disease b. Shoe boil
c. Wind gall d. Bowed tendon

53. Peroneal tenotomy is indicated for the treatment of

a. Stringhalt b. Bog spavin
c. Knuckling d. Curb

54. Tenotomy of flexor tendon is indicated for the treatment of

a. Sprain b. Knuckling
c. Buttress foot d. Curb

55. Friebel's apparatus is indicated in the treatment of

a. Quittor
b. Seedy toe
c. Knuckling
d. Sectioning of flexor tendon

56. Pannus is a symptom of

a. Cataract b. Glaucoma
c. Retinitis d. Keratitis

57. Ptosis is a symptom due to the paralysis of

a. Auriculo palpebral nerve
b. Infra orbital nerve
c. Optic nerve
d. Mandibular nerve

58. Sweeny is a disease condition due to paralysis of

a. Radial nerve
b. Anterior tibial nerve
c. Supra scapular nerve
d. Sciatic nerve

59. In radiographic parameters, one of the following is considered constant

a. Time
b. Part film distance
c. Kilo voltage peak
d. Milliamp rage seconds

60. The scattering of x-rays from the tube is prevented by the use of

a. Lead outer cover b. Diaphragm
c. Cone d. Grid

61. Urethral calculi in cats in the form of

a. Small concretions b. Sand like particles
c. Large stones d. Small stones

62. Staphyloma is a sequelae of

a. Conjunctivitis b. Cataract
c. Iridocyclitis d. Corneal ulcer

63. Increase in intraocular pressure is called

a. Cataract b. Glaucoma
c. Hydrophthalmus d. None of these

64. Collimator in an x-ray machine is used to decide the

a. Field of radiation
b. Distance of X-rays
c. Type of radiation
d. Direction of x-rays

65. Ramstedt's operation is done in

a. Achalasia
b. Stricture of lower oesophageal sphincter
c. Stricture of colon
d. Pyloric stenosis

66. Hobdaying is an operation indicated for

a. Stenosis of oesophagus
b. Paralysis of recurrent laryngeal nerve
c. Stenosis of pylorus
d. Ablation of ear canal

67. Hyovertebrotomy is an operation indicated for

a. Intervertebral disc disease
b. Fracture of vertebrae
c. Empyema of guttural pouch
d. Empyema of frontal sinus

68. 'Tall R' wave in ECG denotes

a. Bilateral ventricular enlargement
b. Left ventricular enlargement
c. Bilateral atrial enlargement
d. Right ventricular enlargement

69. Haemoptysis means presence of blood in

a. Urine b. Sputum
c. Vomitus d. Stools

70. Lactation tetany in cattle is due to

a. Hypoglycemia
b. Hypomagnesaemia
c. Hypocalcemia
d. Hypophosphataemia

71. Iron deficiency anaemia is more common in

a. Calves b. Lambs
c. Piglets d. Puppies

72. Significant amount of delta bilirubin in plasma suggests

a. Acute hepatitis b. Heaptic necrosis
c. Cholestasis d. Cirrhosis

73. Peat scours in caves is due to deficiency of

a. Calcium
b. Selenium & Vit. E
c. Copper
d. Cobalt

74. Eclampsia in mares is caused by

a. Hypoproteinemia
b. Hypophosphatemia
c. Hypomagnesemia
d. Hypocalcemia

75. Which of the following is a anti ketogenic volatile fatty acid for ruminanats

a. Acetic acid b. Butyric acid
c. Propionic acid d. Succinic acid

76. Polioencephalomalacia is due to deficiency of

a. Riboflavin b. Thiamin
c. Niacin d. Cyanocobalamine

77. Papple shaped abdomen is characteristic of

a. Traumatic reticuloperitonotis
b. Abaomasal displacement
c. Omasal impaction
d. Vagal indigestion

78. Ovine ketosis is also referred as

a. Pregnancy toxemia
b. Twin lamb disease
c. Acetonemia of sheep
d. All of the above

79. Barker foal syndrome is due to

a. Antenatal or postnatal hypoxia
b. Isoimmune hemolytic anaemia
c. Clostridial infection
d. Premature foaling

80. Persistent ruminal tympany, bradycardia and displaced heart sounds in cattle suggests
a. Traumatic Pericarditis
b. Traumatic reticulitis
c. Diaphramatic hernia
d. Traumatic reticulo-peritonitis

81. Pollakyuria means
a. Excessive urination
b. Frequent painful urination
c. Constant dribbling of urine
d. Decreased output of urine

82. Azotemia means
a. Excessive accumulation of NPN
b. Uraemia
c. Both a and b
d. Decreased levels of NPN

83. Paper crackling rales on auscultation is suggestive of
a. Pneumonia
b. Bronchitis
c. Pulmonary emphysema
d. Pulmonary oedema

84. Acute bovine pulmonary emphysema and edema (*ABPPE*) is caused by
a. Excessive feeding of silage
b. Excessive feeding of lush greens
c. Feeding of moldy hay
d. Excessive feeding of roughages

85. Systolic and diastolic murmur on auscultation is suggestive of
a. Myocarditis
b. Pericarditis
c. Patent ductus arteriosus
d. Vegetative endocarditis

86. Diaphragmatic hernia is more common in
a. Cows b. Buffaloes
c. Bullocks d. Sheep

87. Increased frequency, tenesmus with presence of abundant mucus in faeces is suggestive of
a. Small bowel diarrhea
b. Large bowel diarrhea
c. Exocrine pancreatic insufficiency
d. None of the above

88. Diabetic cataract is due to accumulation of which of the following in lens capsule
a. Insulin b. Sorbitol
c. Isopropanol d. Ketoacids

89. 'Gag reflex test' is performed to know the functional ability of
a. Glossopharyngeal nerve
b. Vestibulocochlear nerve
c. Hypoglossal nerve
d. Trigeminal nerve

90. Water-hammer pulse is pathognomonic of
a. Interventrucular septal defect
b. Patent ductus arteriosus
c. Dilated cardiomyopathy
d. Aortic incompetence

91. Botulism poisoning is common in
a. Raw milk
b. Boiled milk
c. Canned milk products
d. Sour milk

92. Leptospira organisms are shed in the milk of
a. Cow and goat
b. Man
c. Man, cow and goat
d. None of the above

93. Brucella antibodies in milk are tested by
a. RRT b. MBRT
c. ABRT d. All of the above

94. The most common method of pasteurization of bulk milk among the following is
a. Batch b. LIST
c. HTST d. Vat type

95. Coliforms will cause ..... of milk
a. Homo-fermentation
b. Lacto-fermentation
c. Gas fermentation
d. Hetero-fermentation

96. Whiskers in meat is caused by
a. Bacteria b. Moulds
c. Protozoa d. Yeast

97. Food intoxication is produced by

a. Staphylococcus b. Salmonella
c. Rota viruses d. Toxoplasma

98. If milk is stored at 40°C, there is more chance of getting infection with

a. Acromonas b. Plesiomonas
c. Listeria d. Campylobacter

99. Milk stones contain

a. Milk solids b. Detergents
c. Milk fat d. All of the above

100. Electrical stimulation reduces

a. Cold shortening
b. Freezer burn
c. Bone taint
d. None of the above

101. Rickettsial disease transmitted to abattoir workers by aerosol

a. Psittacosis b. Scrub typhus
c. Deer fly fever d. Q fever

102. Torrymeter is used to detect meat .....

a. Spoilage b. Toughness
c. Bloom d. Juiciness

103. Media used for the estimation of *Escherichia coli* in milk

a. EMB agar
b. EMB broth
c. MacConkey broth
d. MacConkey agar

104. Nitrazine yellow test on meat is for measuring

a. pH
b. Bleeding efficiency
c. Sodium chloride content
d. Spoilage

105. Sling psychrometer is used to measure

a. Humidity
b. Wind direction
c. Atmospheric pressure
d. Wind speed

106. Drip is associated with

a. Curing b. Chilled meat
c. Frozen meat d. *E. coli*

107. Hallmark of healing is

a. Proud Flesh
b. Granulation tissue
c. Keloid
d. Haematoma

108. Oedema factor play important role in pathogenesis of

a. Botulism b. Anthrax
c. Listeriosis d. Streptococcosis

109. Habel's test is done for the diagnostic assessment of

a. Botulism b. Anthrax
c. Listeriosis d. Rabies

110. Stuttgart disease is caused by

a. Bacillus spp. b. Clostridium spp.
c. Leptospira spp. d. Pasturella spp

111. Visna/Maedi commonly occurs in

a. Goat b. Sheep
c. Cattle d. Swine

112. First virus which was grown on the chorio-allantoic membrane (CAM) is

a. Lyssavirus b. Avipoxvirus
c. Morbillivirus d. Adenovirus

113. Rectal pinch test is used for diagnosis of

a. Pearl disease b. Johne's disease
c. Brucellosis d. Actinobacillosis

114. Gid or Sturdy is caused by

a. Coenurus cerebralis
b. Ecchinococcus granulosus
c. Cysticercus tenuicollis
d. Cysticercus cellulosae

115. Toxins released by *Cl. tetani* is

a. Tetanospasmin
b. Tetanolysin
c. Non-spasmogenic toxin
d. All of the above

116. Anthrax mainly occur in

a. Rainy season b. Winter
c. Summer d. Spring

117. "Zebra marking" in the large intestine is characteristic feature of

a. Johnes's disease b. PPR
c. Rinderpest d. Both b and c

118. "Circling disease" in cattle is caused by

a. Listeria monocytogenes
b. Erysipelothrix rhusiopathiae
c. Streptococcus equi
d. Chlamydia psittacii

119. Post mortem of carcass is prohibited in

a. Haemorragic septicemia
b. Rinder pest
c. Anthrax
d. Rabies

120. Fowl paratyphoid is caused by

a. Salmonella pullorum
b. Salmonella gallinarum
c. Salmonella typhimurium
d. Salmonella typhosa

121. Most important source of Marek's disease infection is

a. Aerosol
b. Nasal secretions
c. Feather follicle
d. Faeces of infected birds

122. Viscerotropic velogenic form of Ranikhet disease is also known as

a. Doyle's form b. Beach's form
c. Beaudette's form d. Hitchner's form

123. Which of the following causes clinical disease in new born chicks

a. Avian encephalomyelitis
b. Lymphoid leukosis
c. Egg drop syndrome
d. Marek's disease

124. Chicken infectious anemia virus destroys

a. B- cells b. T-cells
c. Heterophils d. NK cells

125. Inclusion body hepatitis is caused by

a. Birnavirus b. Adenovirus
c. Enterovirus d. Reovirus

126. Cell associated Marek's disease virus is found in

a. T lymphocytes b. B lymphocytes
c. Feather follicle d. Heterophils

127. Cell free Marek's disease virus is found in

a. T lymphocytes b. B lymphocytes
c. Feather follicle d. Heterophils

128. Immunosuppressive disease of poultry is

a. Infectious bursal disease
b. Chicken infectious anemia
c. Marek's disease
d. All of the above

129. Heat resistant ability spore forming bacterium is because of

a. Mycolic acid
b. Teichoic acid
c. Ca dipicholinic acid
d. Lipopolysaccharide

130. Tetrathionate broth selectively favours the growth of

a. Escherichia b. Pseudomonas
c. Klebsiella d. Salmonella

131. Romanowsky stain is used to demonstrate

a. Haemobartonella b. Mycobacterium
c. Leptospira d. Trichophyton

132. Lateral bodies are present in the structures of

a. Vaccinia virus
b. Cow pox virus
c. Variola virus
d. All of the above

133. Medium used for the growth of mycoplasma is

a. PPLO Agar
b. Frey's medium
c. Both a and b
d. Thiol medium

134. Parvo virus multiplies only in the nuclei of

a. Resting cells b. Dividing cells
c. Stable cells d. None of the above

135. Teichoic acid present in the cell wall of

a. G^{+ve} bacteria
b. G^{-ve} bacteria
c. Both a and b
d. None of the above

136. Current commercial vaccines for equine influenza contain the subtypes

a. H7N7 b. H3N8
c. Both a and b d. None of the above

137. Antigenic shift in avian influenza viruses involves

a. Minor changes in sequences
b. Major segmental re-assortments
c. No changes occur in the genetic material
d. None of the above

138. Edwards media is used in the isolation of

a. Staphylococci b. Leptospira
c. Bacillus d. Streptococci

139. Viruses are

a. Obligate parasites
b. Intracellular parasites
c. Both a and b
d. None of the above

140. Dimorhpic Fungi is

a. Blastomyces b. Coccidioides
c. Histoplasma d. All of the above

141. Spheroplasts are

a. G-ve bacteria without cell wall
b. G-ve bacteria with partial cell wall
c. G-ve bacteria without cytoplasmic membrane
d. G-ve bacteria with partial cytoplasmic membrane

142. Concentration of serum in maintenance medium for tissue culture is

a. 1-2% b. 5-10%
c. 10-20% d. None of the above

143. A dye which is used in immunofluorescence is

a. Lissamine rhodamine B
b. Cy3
c. Negrosine
d. Both a and b

144. Sabouraud's dextrose agar is an example for

a. Fungal culture medium
b. Enrichment medium
c. Selective medium
d. None of the above

145. Diene's staining is used for identifying of

a. Chlamydia b. Mycobacteria
c. Listeria d. Mycoplasma

146. The ability of serum to kill Gram negative bacteria is proportional to the amount of

a. Beta lysine
b. Antibody and complement
c. Blood cells
d. Fibrin

147. Capsule of virulent strains of *Bacillus anthracis* is made up of

a. Gamma glutamyl polypeptide
b. Hyaluronic acid
c. Polysacchaaride
d. Mycolic acid

148. Mancini test is

a. Single diffusion in one dimension
b. Single diffusion in two dimensions
c. Double diffusion in one dimension
d. Double diffusion in two dimensions

149. Selective media for Listeria is

a. MCA b. BGA
c. PALCAM d. Chocolate agar

150. COFAL test is used in the diagnosis of

a. Bovine leukemia
b. Avian leukosis
c. Equine infectious anaemia
d. Human immunodeficiency virus

Answer Key

1. a	2. c	3. b	4. a	5. b	6. c	7. b	8. a	9. c	10. b
11. d	12. b	13. c	14. c	15. c	16. a	17. d	18. b	19. a	20. a
21. b	22. d	23. b	24. c	25. c	26. d	27. c	28. d	29. d	30. d
31. b	32. b	33. a	34. c	35. c	36. c	37. b	38. b	39. b	40. b
41. b	42. c	43. b	44. b	45. c	46. c	47. b	48. b	49. c	50. a
51. a	52. c	53. a	54. b	55. c	56. d	57. a	58. c	59. b	60. a
61. b	62. d	63. b	64. a	65. d	66. b	67. d	68. a	69. b	70. b
71. c	72. c	73. b	74. d	75. c	76. b	77. d	78. d	79. a	80. c
81. b	82. c	83. c	84. b	85. c	86. b	87. b	88. b	89. c	90. b
91. c	92. c	93. c	94. c	95. c	96. b	97. a	98. d	99. d	100. a
101. d	102. a	103. a	104. a	105. a	106. c	107. b	108. b	109. d	110. c
111. b	112. b	113. b	114. a	115. d	116. a	117. d	118. a	119. c	120. c
121. c	122. a	123. a	124. b	125. b	126. a	127. c	128. d	129. c	130. d
131. a	132. d	133. c	134. b	135. a	136. c	137. b	138. d	139. c	140. d
141. b	142. a	143. d	144. a	145. d	146. a	147. a	148. b	149. c	150. b

Mock Test - 2

1. Bleeding spots in cattle is caused by
a. Setaria digitata
b. Parafilaria bovicola
c. Dirofilaria immitis
d. Parafilaria haemoragica

2. Milk allergy is because of
a. Lactose
b. Ash
c. Albumin fraction of milk
d. None of the above

3. Drug of choice for Echinococcus granulosus as a preventive measure of hydatidosis is
a. Praziquantel b. Pyrantel pomate
c. Ivermectin d. Niclosamide

4. Acute fibrinous endocarditis with mural thrombosis on left auricle in cattle is considered as pathognomonic for
a. Haemorrhagic Septicemia
b. Malignant oedema
c. Black quarter
d. Bacillary haemoglobinuria

5. Complete metamorphosis is observed in
a. Lice b. Fleas
c. Ticks and Mites d. Flies and Fleas

6. Modified white house technique is done for
a. Roaring b. Guttural pouch
c. Ectropion d. Entropion

7. Fussy eating is characteristics of
a. Gastric ulcer
b. Hepatitis
c. Chronic renal failure
d. Pancreatitis

8. Fleas that possess both genal and prontal combs are
a. Echidnophaga
b. Ctenocephalides
c. Xenopsylla
d. Pulex

9. Dose rate of Vincristine for the treatment of Sticker tumor in dog is
a. 0.025 mg/kg, IV
b. 0.5-1 mg/kg, IV
c. 1-2 mg/kg, IV
d. 2-5 mg/kg, IV

10. Which strain is not used in the preparation of "Raksha Ovac" vaccine
a. O b. A
c. SAT 1 d. Asia 1

11. Basophilic stippling is observed in which metal poisoning
a. Arsenic b. Copper
c. Lead d. Mercury

12. Spread of carcinomas in the body is mainly occurred by which route
a. Haematogenous
b. Lymphatic route
c. Seeding within body cavity
d. None of these

13. Cold enrichment protocol is related to
a. Listeria monocytogenes for brain sample
b. Listeria monocytogenes for fecal sample
c. Yersinia enterocolitica for brain sample
d. All of the above

14. Wound healing with excessive granulation tissue is called as
a. Proud flesh b. Granulating wound
c. Ulcerative wound d. Both a and b

15. Study of morphology of fungal hypae is done by
a. Direct light microscopy
b. LCB staining
c. Slide culture
d. PAS staining

16. Marsupialisation is performed for treatment of
a. Intestinal obstruction b. Pyometra
c. Urolithiasis d. Intussusceptions

17. Most common cause of infertility in male domestic animals is

a. Paraphimosis
b. Tumour of penis and prepuce
c. Testicular degeneration
d. Persistence of penile frenulum

18. Which of the following virus have segmented genome configuration?

a. Paramyxoviridae b. Birnaviridae
c. Filoviridae d. Rhabdoviridae

19. Lamb dysentery is usually occur in which age group

a. 1-3 days b. 4-15 days
c. 3-6 weeks d. 6-9 weeks

20. Which species can be affected with African horse sickness

a. Equine and Ovine
b. Equine and feline
c. Equine and Canine
d. All of the above

21. Cytotoxic antibiotics which is used as antineoplastic agent is

a. Bleomycin b. Etoposide
c. Vincristine d. Methotrexate

22. Ringer and Gillespie medium is used for isolation of

a. Campylobacter b. Listeria
c. Leptospira d. Mycobacteria

23. Hamburger's disease is

a. Amoebiasis
b. Botulism
c. E. coli O: 157, H: 7
d. All of the above

24. Micro abscess in brain is found in

a. Rabies b. Louping ill
c. Listeriosis d. Canine distemper

25. Term "Noma" refers to

a. Gangrenous stomatitis
b. Gangrenous laryngitis
c. Gangrenous oesophagitis
d. Gangrenous pharyngitis

26. One wound one scar theory is applied for

a. Nerve healing b. Ligament healing
c. Tendon healing d. Bone healing

27. Canine Ehrlichiosis is diagnosed by demonstration of

a. Free morula in plasma
b. Morula in platelets
c. Morula in erythrocytes
d. Morula in monocytes

28. Most consistent site for detecting acid- fast bacilli in Johne's disease is

a. Ileum
b. Caecum
c. Ileo-caecal junction
d. Caeco-colic junction

29. Which wild animal is famous for its "laughing call"

a. Hyena b. Small cat
c. Tiger d. Leopard

30. Radiation intensity on the cathode side of the x-ray beam is higher than on anode side is called

a. Attenuation b. Heel effect
c. Half value layer d. Pneumbra

31. Dwarfing and curling of embryo is related to

a. IB virus b. IBD virus
c. FMD virus d. MD virus

32. Dark field microscopy is used to diagnose

a. Campylobacteriosis
b. Listeriosis
c. Leptospirosis
d. Both a and c

33. Steatorrhoea is dysfunction of

a. Liver b. Pancreas
c. Adipose tissue d. Both a and

34. Under which stage of thiophental anaesthesia an endotracheal tube is passed in

a. First stage of anaesthesia
b. Second stage of anaesthesia
c. Third stage of anaesthesia
d. Fourth stage of anaesthesia

35. At which age testes descend into the scrotum in dog

a. 2-5 days after birth
b. Mid gestation
c. Between the last few days of gestation and the last few weeks after birth
d. 2-4 month of age after birth

36. Ganglionic blocker is

a. Mecamylamine b. Nicotine
c. Epibatidine d. Vecuronium

37. Aspirin and sulphonamides cause hemolysis in individuals deficient in ..... enzyme

a. N-acetyltransferase
b. Sulfotransferase
c. Glucose-6-phosphate dehydrogenase
d. Methyltransferase

38. Example of vacuolar degeneration is

a. Fatty change
b. Glycogen storage disease
c. Hydrophic degeneration
d. All of the above

39. Which antibiotic group is contraindicated in young animals

a. Penicillins b. Cephalosporins
c. Fluoroquinolones d. Sulphonamides

40. Commercial product of GnRH is

a. Receptal b. Fertagyl
c. Cystorelin d. All of the above

41. Type of immunity against haemoprotozoan parasites is

a. Premunity
b. Innate immunity
c. Concomittant immunity
d. Sterile immunity

42. Cerebrospinal fluid (CSF) is reabsorbed from the subarachnoid space via

a. Arachnoid villi
b. Choroid plexuses
c. Ependymal cells
d. Neurolemmocytes

43. Study of force acting on animal during standing position is known as

a. Syndesmology b. Biostatics
c. Stress d. Strain

44. Thick layer of dense fibrous tissue in the front of oral cavity is called

a. Dental pad b. Diastema
c. Papilla incisive d. Hard palate

45. Bishoping is punishable under

a. IPC 127 b. IPC 420
c. IPC 426 d. None of the above

46. When the pulse rate increases and its strength decreases, it is called as

a. Running down pulse
b. Bounding pulse
c. Thready pulse
d. None of the above

47. When the fractured fragments lie side by side it is called

a. Oblique fracture
b. Over-riding fracture
c. Distracted fracture
d. Dentate fracture

48. Telazol is a combination of

a. Dissociative anaesthetic and a tranquilizer
b. Muscle relaxant and a tranquilizer
c. Opioid analgesic and a tranquilizer
d. Short acting barbiturate and a tranquilizer

49. Atropine produces tachycardia by

a. Cardiac chronotropism
b. Vagotonic action
c. Vagolytic action
d. Myocardial stimulation

50. Ethylene oxide can be used for sterilization of

a. Endoscopes b. Cameras
c. Plastics d. All of the above

51. Dominant cell types during estrus period in bitch is

a. Neutrophils cells b. Erythrocytes cells
c. Keretinised Cells d. Basal Cells

52. Shape of sperm head in cock is

a. Elongated cylindrical
b. Elongated with hook
c. Elongated with spicule
d. Oval with rounded

53. Oblique ventrovertical presentation of the fetus in cow is also called as

a. Dog sitting posture
b. Nape posture
c. Breech presentation
d. Vertex posture

54. The highest concentration of inositol is found in the semen of

a. Dog b. Bull
c. Ram d. Boar

55. Seminal plasma is slightly alkaline in

a. Boar and Stallion
b. Bull and Boar
c. Ram and stallion
d. Bull and Ram

56. Rabies is classified under

a. Metazoonosis b. Direct zoonosis
c. Cyclozoonosis d. Saprozoonosis

57. Atropine sulphate is contraindicated in

a. Intussusceptions
b. Bovines premedication
c. Equines
d. All of the above

58. Low epidural anesthesia paralyses

a. Hind limb b. Abdomen
c. Perineal region d. Thoracic region

59. Morphine produces

a. Increased tone in gastrointestinal sphincter
b. Decreased tone in gastrointestinal sphincter
c. Increased peristaltic movement
d. Atonic gastrointestinal effect

60. Post mortem inspection fails to detect

a. Peritoneal abscess
b. Johne's disease
c. Tetanus
d. Tuberculosis

61. The standard test which is an indicator of organic content of the sewage is

a. MBRT b. ABRT
c. BOD d. Resazurin test

62. Morphine produces CNS stimulation

a. In dogs
b. In bovines
c. In cats
d. None of the above

63. The first hormone synthesized in the laboratory is

a. Glucagon b. Insulin
c. Parathormone d. Thyroxine

64. Lipid soluble drugs are absorbed from lipoidal membranes in the

a. Ionized form b. Active transport
c. Non ionized form d. Pinocytosis

65. A short acting Mydriatic and a Cycloplegic drug used in Diagnostic Retinoscopy is

a. Tropicamide b. Hyoscine
c. Atropine sulphate d. Propantheline

66. All of the following are proton pump inhibitor except

a. Omeprazole b. Mebendazole
c. Lansoprazole d. Pantoprazole

67. Scapular index of horse is

a. 1:2 b. 1:3
c. 1:1 d. 1:0.7

68. Steely wool condition is seen with the deficiency of

a. Iron b. Copper
c. Selenium d. Magnesium

69. Scrotal ligament is absent in

a. Boar b. Stallion
c. Bull d. Dog

70. All are pneumotoxicant except

a. ANTU b. NH_3
c. Pb d. H_2S

71. Nerve block is performed two inches below and behind the lateral tuberosity of the tibia for

a. Tibial nerve block
b. Ulnar nerve block
c. Fibular nerve block
d. Patellar desmotomy

72. Modified Knott's method is used for detection of

a. Histoplasmosis b. Theileriosis
c. Microfilariasis d. Trypanosomiasis

73. Vitamin essential in the diet for the prevention of black tongue in dogs is

a. Niacin b. Riboflavin
c. Biotin d. Pathothenic acid

74. Eye worm of poultry is

a. Uncinaria stenocephala
b. Ostertegia ostertegi
c. Oxyspirura mansoni
d. Dirofilaria immitis

75. What is the most common cause of death in captured Wildlife?

a. Extertional rhabdomyolusis
b. Over-straining disease
c. Cardiac arrest
d. Both a and b

76. Time of testicular descent in cats is

a. 2 to 5 hours after birth
b. 2-5 hours before birth
c. 2-5 days after birth
d. 2-5 weeks after birth

77. Schaeffer-Futon stain is used for

a. Isolation of mesophiles
b. Isolation of endospores
c. Isolation of facultative anaerobes
d. All of the above

78. Which of the following mode of echo display is used for echocardiography?

a. Amplitude mode
b. Real time B mode
c. Motion mode
d. Static B mode

79. Drug that is used for prophylactic as well as curative purpose in Surra is

a. Antrycide Pro salt
b. Diaminazine aceturate
c. Decamethonium
d. Imidocarb

80. The principal endogenous activator of fibrinogen is

a. Prekallikrein
b. Urokinase
c. Tissue plasminogen activator
d. All of the above

81. Which insecticide has persistant residues in fatty tissues?

a. Organophosphates
b. Pyrethrins
c. Organochlorides
d. Carbamates

82. Part of mesencephalon is

a. Tectum b. Tegmentum
c. Crura cerebri d. All of the above

83. Number of cervical vertebrae in cat is

a. 5 b. 6
c. 7 d. 8

84. Which is not a zoonotic disease?

a. Pseudo cow pox
b. Sheep pox
c. Monkey pox
d. Cow pox

85. Punched out ulcers on lungs are seen in

a. Glanders b. Strangles
c. Theileriosis d. All of these

86. Salkowitch test is used for

a. Ca^{++} b. Mg^{++}
c. Sugar d. Protein

87. White spotted kidney is seen in

a. Pyelonephritis
b. Interstitial nephritis
c. Pyemic nephritis
d. Suppurative nephritis

88. pH indicator in Mannitol salt agar is

a. Neutral red b. Phenol red
c. Neutral agar d. Lactose

89. Cherry red discoloration of chicken embryo is seen with the inoculation of

a. Blue tongue virus
b. New castle disease virus
c. Infectious bronchitis virus
d. Infectious bursal disease virus

90. Shortness of breath during recumbency is termed as

a. Apnoea b. Oligopnoea
c. Orthopnoea d. All of the above

91. Test used for detection of bacterial endotoxins is

a. Ames test
b. Eagles test
c. Limulus Amoebocyte lysate (LAL) test
d. None of these

92. Test used for detection of eCG in mare serum is

a. Fried man modified test
b. Zondek test
c. Rabbit test
d. All of the above

93. Staphylococcal toxic shock syndrome (TSS) is associated with

a. A enterotoxin b. C enterotoxin
c. F enterotoxin d. B enterotoxin

94. Atropine test is performed for

a. Jaundice b. LDA
c. Vagal indigestion d. All of these

95. Member of enterobacteriacae family which ferments lactose is

a. Proteus b. Salmonella
c. Klebsiella d. Yersinia

96. Transfixation ligation is used in

a. Ovariohysterectomy
b. Caslicks operation
c. Zepps operation
d. Both b and c

97. Grooved olecranon process is found in

a. Ox b. Dog
c. Horse d. Fowl

98. Vaccination of all susceptible animals over a large area is known as

a. Aphthization
b. Ovination
c. Ring vaccination
d. Blanket vaccination

99. Simple squamous epithelium is found in

a. Pleura b. Tongue
c. Skin d. Rumen

100. Epithelia involved in diffusion, osmosis and filtration is

a. Simple squamous epithelium
b. Stratified squamous epithelium
c. Simple columnar epithelium
d. Stratified columnar epithelium

101. Intestinal glands are example of

a. Simple tubular gland
b. Simple coiled tubular gland
c. Simple branched tubular gland
d. Simple alveolar gland

102. Wry muzzle is common in the foetus of

a. Holstein cattle
b. Red polled cattle
c. Short horns cattle
d. Jersey cattle

103. An intermediate host for Prosthogonimus species is

a. Ants b. Larvae of flea
c. Nymphs of dragon fly d. Mink

104. Verapamil an anti-arrhythmic drug comes under

a. Class I b. Class II
c. Class III d. Class IV

105. Connective tissue cell that involves in the growth of new capillary is

a. Fibroblasts b. Pericytes
c. Adipocytes d. Plasma cells

106. The germ cell producing gland is

a. Pancreas b. Ovary
c. Thyroid d. Adrenal

107. Gut acting sulphonamide is

a. Sulfaguanidine
b. Succynil sulfathiazole
c. Phthalyl sulfathiazole
d. All of the above

108. An example of Metazoonoses subtype IV is

a. Yellow fever
b. Paragonimosis
c. Tick- borne encephalitis
d. Eastern equine encephalitis

109. Which of the following is cyclopropagative

a. Ancylostoma b. Schistosoma
c. Fasciola d. None of these

110. The antidote for Organophosphate poisoning is

a. Atropine sulphate with oximes
b. Calcium borogluconate
c. Sodium thiosulphate
d. Methylene blue

111. Lysosomal α-glucosidase deficiency is observed in

a. Pompe disease
b. Von Gierke disease
c. Corie disease
d. Mockenberg disease

112. Pott's disease is also known as

a. Antharx b. Leptospirosis
c. Tuberculosis d. Brucellosis

113. Carpus luteum of pregnancy is known as

a. CL verum b. CL spurium
c. CL albicans d. CL dublicans

114. Primary mode of death is

a. Asphyxia b. Syncope
c. Coma d. All of the above

115. Cryptorchidism is common in

a. Stallion b. Boar
c. Bull d. Both a and b

116. Foreplay is necessary for mating in

a. Stallion b. Dog
c. Boar d. Both a and b

117. Basophilic stippling is seen in

a. Cyanide poisoning
b. Ratti poisoning
c. Lead poisoning
d. Snake bite

118. FIGLU test is used for

a. Copper deficiency
b. Iron deficiency
c. Cobalt deficiency
d. Calcium deficiency

119. DISA vaccine is used for

a. Bluetongue b. FMD
c. HS d. Anthrax

120. Antidote used for Ivermectin is

a. Atropine b. Physostigmine
c. Acetyl cysteine d. Dexamethasone

121. Time of testicular descent in cat is

a. Mid gestation
b. 10 days before birth
c. 2-5 days after birth
d. Just before birth

122. Bocor's operation is performed for

a. Teat fistula b. Cleft palate
c. String halt d. Spaying

123. Bence Jones proteins are characteristic of

a. Squamous cell carcinoma
b. Basal cell carcinoma
c. Multiple myeloma
d. Odontoma

124. Which of the following is not a part of epidemiological triad

a. Host b. Agent
c. Environment d. Time

125. Strain of *Brucella abortus* used for preparation of antigen is

a. S-19 b. S-91
c. S-98 d. S-99

126. V-Y plasty is used for the correction of

a. Symblepharon b. Ankyloblepharon
c. Entropion d. Ectropion

127. Vagal indigestion is also known as

a. Hardware disease
b. Hoflund syndrome
c. Eclampsia
d. None of the above

128. Flehmann reaction is absent in

a. Buck b. Ram
c. Bull d. Boar

129. Outbreak of a disease in avian population is called

a. Epidemic b. Pandemic
c. Epizootic d. Epornitics

130. Protective antibody titre against rabies is measured by

a. FAT b. ELISA
c. SNT d. RFFIT

131. Coomb test is used for

a. Cryptococcosis b. Histoplasmosis
c. Brucellosis d. Moniliasis

132. Thawing temperature of semen is

a. 37°C for 5 min b. 37°C for 10 min
c. 37°C for 2 sec d. 37°C for 30 sec

133. Freshly voided feces of which species can be used for fuel

a. Deer b. Camel
c. Giraffe d. Pigmy hog

134. Double capsid is present in

a. Retrovirus b. Picornavirus
c. Reovirus d. Arterivirus

135. Boot shaped spicules are seen in

a. Dictyocaulus filariae
b. Nematodirus fillicolis
c. Trichinella spiralis
d. Dipylidium caninum

136. Sporangiospores are formed by

a. Zygomycetes b. Ascomycetes
c. Basidiomycetes d. Dueteromycetes

137. Hyperthyroidism in cats is most commonly diagnosed by

a. Computerized tomography
b. Ultrasonography
c. Radiography
d. Nuclear scintigraphy

138. White liver disease in sheep is observed due to

a. Copper deficiency
b. Iron deficiency
c. Cobalt deficiency
d. Calcium deficiency

139. Neoplasm of Zona glomerulosa may induce

a. Increased blood calcium
b. Decreased blood calcium
c. Increased blood sodium
d. Decreased blood sodium

140. Pernicious anaemia is seen in infection of

a. Diphylobothrium latum
b. Dipylidium caninum
c. Strongylus vulgaris
d. Trichinella spiralis

141. Which of the following is incorrect

a. Cystic duct arises from cranial portion of hepatic diverticulum
b. Gall bladder develops from caudal portion of hepatic diverticulum
c. Liver develops from endoderm
d. None of the above

142. Which of the following is a Contact Zoonosis

a. Sarcocystosis b. Actinomycosis
c. Pasteurellosis d. Leucosis

143. Cauliflower like growth is observed in

a. Basal cell carcinoma
b. Lipoma
c. Squamous cell carcinoma
d. Haemangioma

144. Lines of Zahn is characteristics of

a. Thrombus formation
b. Emboli formation
c. Imfarction
d. Ulcer

145. Which one is a correct statement about four horned antelope

a. Also known as Chowsingha
b. Are grouped under Bovidae
c. A pair of glands are located between false hooves
d. All of the above

146. Group of fish is called

a. Murder b. School
c. Parliament d. Troop

147. Ovulation in cattle takes place at

a. 10-14 hours before the end of estrum
b. 10-14 hours after the end of estrum
c. Last day of estrum
d. Mid estrum

148. Winter coccidiosis is caused by

a. Eimeria zuernii b. Eimeria stiedae
c. Eimeria tenella d. Eimeria gilruthi

149. Burtons line is seen in

a. Arsenic poisoning
b. Lead poisoning
c. Cyanide poisoning
d. Zinc phosphide poisoning

150. Rat tailed appearance of tail in Horses is seen in infection of

a. Oxyuris equi
b. Strongylus vulgaris
c. Ascaris spp.
d. Trichostrongylus spp.

Answer Key

1. b	2. c	3. a	4. c	5. d	6. b	7. a	8. b	9. a	10. c
11. c	12. b	13. a	14. d	15. c	16. b	17. c	18. b	19. b	20. c
21. a	22. c	23. c	24. c	25. a	26. c	27. d	28. c	29. a	30. b
31. a	32. d	33. d	34. c	35. c	36. a	37. c	38. d	39. c	40. d
41. a	42. a	43. b	44. a	45. b	46. a	47. b	48. a	49. a	50. d
51. c	52. a	53. a	54. d	55. d	56. b	57. d	58. c	59. a	60. c
61. c	62. c	63. d	64. c	65. a	66. b	67. a	68. b	69. c	70. c
71. c	72. c	73. a	74. c	75. d	76. c	77. b	78. c	79. a	80. a
81. c	82. d	83. c	84. b	85. a	86. a	87. b	88. b	89. a	90. c
91. c	92. d	93. c	94. c	95. c	96. a	97. b	98. d	99. a	100. a
101. a	102. d	103. c	104. d	105. b	106. b	107. d	108. c	109. c	110. a
111. a	112. c	113. a	114. d	115. d	116. d	117. c	118. c	119. a	120. b
121. c	122. c	123. c	124. d	125. d	126. d	127. b	128. d	129. d	130. d
131. c	132. d	133. b	134. c	135. a	136. a	137. d	138. c	139. c	140. a
141. a	142. b	143. c	144. a	145. d	146. b	147. b	148. a	149. b	150. a

Mock Test - 3

1. Intermediate host for *Onchocerca gibsoni* is
a. Culicoides pungens
b. Stomoxys calcitrans
c. Musca domestica
d. Sarcophaga dux

2. Parasite which occurs in the ligamentum nuchae of cattle and buffalo is
a. Onchocerca linealis
b. Onchocerca gutturosa
c. Onchocerca cervicalis
d. Both a and b

3. Eosinophilic granulomatous lesions in urinary bladder are seen in the infection with
a. Setaria b. Dipetalonema
c. Onchocerca d. Stephanofilaria

4. Transport host for kidney worm of swine is
a. Musca b. Ants
c. Earthworm d. Snails

5. "Gilt only breeding" proposed by Stewart in is recommended for prevention of
a. Stephanurus dentatus
b. Metastrongylus
c. Bourgelatia diducta
d. Taenia solium

6. High fever, anaemia, icterus, swollen superficial lymph nodes, turkey egg appearance infarcts in kidney are observed in infection with
a. Anaplasma spp.
b. Babesia spp.
c. Theileria spp.
d. Trypanosoma spp.

7. "Inverse age resistance" is observed in
a. *Anaplasma* spp. b. *Babesia* spp.
c. *Theileria* spp. d. *Trypanosoma* spp.

8. Theileriosis in cattle is transmitted by
a. Hyalomma anatolicum
b. Boophilus annulatus
c. Rhipicephalus spp.
d. Both a and c

9. Rainey's corpuscles are
a. Bradyzoites of Sarcocystis spp.
b. Tachyzoites of Sarcocystis spp.
c. Bradyzoites of Toxoplasma spp.
d. Tachyzoites of Toxoplasma spp.

10. Babesia parasite resides in
a. Erythrocytes
b. Lymphocytes
c. Macrophages
d. All of the above

11. Protozoan parasite transmitted by Pseudolynchia canariensis in pigeon is
a. Spironucleus columbae
b. Trichomonas gallinae
c. Haemoproteus columbae
d. Tetratrichomonas gallinarum

12. "Koch blue bodies" in bovine tropical theileriosis are seen in
a. Lymphocytes b. Monocytes
c. Plasma cells d. T cells

13. "Dollar spots" of silver colour in flank region of horses are observed in infection of
a. Trypanosoma evansi
b. Trypanosoma theileri
c. Trypanosoma cruzi
d. Trypanosoma equiperdum

14. Sabin-feldman dye test is used for diagnosis of
a. Toxoplasmosis b. Theileriosis
c. Babesiosis d. Sarcocystosis

15. Deposition of iron in lung is known as
a. Siderosis b. Anthracosis
c. Silicosis d. Plumbism

16. Calcification is common in
a. Sheep
b. Cattle
c. Rabbit
d. All of the above

17. Von Kossa's silver nitrate stain stains the calcium in which colour

a. Blue b. Pink
c. Black d. Red

18. Liquefactive necrosis is seen in

a. Vitamin E deficiency in chickens
b. Carbon monoxide and cyanide poisoning
c. Mouldy maize poisoning in horses
d. All of the above

19. Moist gangrene is not seen in

a. Lung b. Intestine
c. Mammary gland d. Extremities

20. During circulatory changes in inflammation axial stream contains

a. Plasma
b. RBCs and WBCs
c. RBCs, WBCs and Platelets
d. Platelets only

21. Delayed wound healing is observed in

a. Vit.- C deficiency
b. Vit.- E deficiency
c. Vit.- B2 deficiency
d. Vit.-B1 deficiency

22. Cell which never regenerates is

a. Bone cell
b. Epithelial cell
c. Neuron
d. Hepatocytes

23. Intravascular clotting of blood in living animal termed as

a. Thrombus b. Embolism
c. Chicken fat clot d. Current jelly clot

24. Stone formed in the vein is called

a. Urolith b. Enterolith
c. Cholelith d. Phlebolith

25. Enlargement of a tissue or organ due to increased size of individual cell is called

a. Hyperplasia b. Hypertrophy
c. Metaplasia d. Dysplasia

26. Lack of differentiation of neoplastic cells through inadequate maturation is known as

a. Dysplasia b. Anaplasia
c. Metaplasia d. hyperplasia

27. Perivascular lymphocytic infiltration just outside the blood vessel is known as

a. Perivascular cuffing
b. Satellitosis
c. Gitter cells
d. Plasma cells

28. Natural killer (NK) cells are

a. Activated Macrophages
b. Lymphocytes
c. Basophils
d. Activated Neutrophils

29. Waxy degeneration is also known as

a. Cloudy swelling
b. Hydropic degeneration
c. Amyloid infiltration
d. All of the above

30. Iron particle can be stained by

a. Massons trichrome method
b. Van kossa method
c. Pearls Prussian blue method
d. None of the above

31. Most of the lymphocytes (-70%) present in blood are

a. Natural killer (NK) cells
b. T-Lymphocytes
c. B-Lymphocytes
d. None of the above

32. Mononuclear phagocyte system (MPS) or reticuloendothelial system (RES) is mainly composed of

a. Monocytes andNatural killer (NK) cells
b. Monocytes and macrophages
c. Monocytes and Lymphocytes
d. None of the above

33. Clockface or cart-wheel nucleus is found in

a. Eosinophils b. Helper T Cells
c. Heterophils d. Plasma cells

34. Functional counter part of neutrophils in poultry and rabbit is

a. Eosinophils b. Helper T Cells
c. Heterophils d. Plasma cells

35. Emigration of leucocytes towards the site of injury along chemical gradient is

a. Margination b. Chemotaxis
c. Pavmentation d. Rhexis

36. Tract in the tissues, communicating with an epithelial surface, discharging pus from abscess

a. Fissure b. Fistula
c. Atresia d. Sinus

37. Chemical mediators responsible for pain are

a. 5-hydroxytryptamine (serotonin)
b. Kinins (bradykinin)
c. Prostaglandins
d. All of the above

38. Accumulation of blood in the ventral portion of the body due to influence of gravity

a. Livor mortis b. Algor mortis
c. Rigor mortis d. None of the above

39. Pus cells are

a. Macrophages b. Lymphocytes
c. Basophils d. Neutrophils

40. Which cell is not found in blood?

a. Macrophages b. Lymphocytes
c. Basophils d. Neutrophils

41. Pus does not clot because

a. Pus is alkaline in nature
b. Does not contain platelets
c. Proteolytic enzymes of neutrophils liquefy fibrin
d. All of the above

42. Main component of exudate in serous Inflammation is

a. Plasma b. Mucus
c. Serum d. Fibrin

43. Cytokines cause macrophages to fuse into large, multi-nucleated giant cells are

a. IFN γ b. IL-4
c. IL-1 d. Both a and b

44. Familial predisposition to anaphylaxis is called

a. Atopy b. Tolerence
c. Idiosyncracy d. Both a and b

45. Most common type of nephritis seen in animals is

a. Interstitial nephritis
b. Glomerulonephritis
c. Tubular nephritis
d. All of the above

46. Shrunken and contracted kidney with a finely granular surface is seen in

a. Acute glomerulonephritis
b. Subacute glomerulonephritis
c. Chronic glomerulonephritis
d. Acute interstitial nephritits

47. Inability of penis to come out through the prepuce is known as

a. Paraphimosis b. Phimosis
c. Rainbow penis d. Balanitis

48. Inflammation of stomach is known as

a. Stomatitis b. Gastritis
c. Gastroenteritis d. Typhlitis

49. Birth of a dead fetus at full term gestation period is called

a. Still birth b. Abortion
c. Premature birth d. None of the above

50. Commonly used method to diagnose neoplasia in animals is

a. Exfoliative cytology b. X-Ray
c. Biopsy d. Staining method

51. Fibrosarcoma in esophagus of dog is caused by

a. Aspergillus flavus
b. Spirocerca lupi
c. Eimeria stiedae
d. Gongylonema neoplasticum

52. Most common neoplasm of the eye and related structures of cattle are

a. Adenocarcinoma
b. Basal cell carcinoma
c. Squamous cell carcinoma
d. Leiomyoma

53. A neoplasm composed of a variety of cell types representing more than one germ layer is called

a. Papilloma
b. Carcinoma
c. Teratoma
d. Basal cell carcinoma

54. Nearly phosphorus is present in

a. Bones
b. Liver
c. Blood
d. None of the above

55. Ross test is used to detect the presence of

a. Bile salts
b. Glucose
c. Ketone bodies
d. Blood

56. "Nasal granuloma" in cattle is caused by

a. Schistosoma spindalis
b. Schistosoma nasalis
c. Sporothix schenckii
d. Rhinosporadium seeberi

57. Extensive demyelination of neurons occurs in

a. Canine distemper
b. Infectious canine hepatitis
c. Leptospirosis
d. Rabies

58. "Sequestra formation" and Marbling appearance of lung is Characteristic of

a. CBPP
b. CCPP
c. Tuberculosis
d. Both a and b

59. Absence of rigor mortis is seen in

a. Haemorragic septicemia
b. Rinder pest
c. Anthrax
d. Rabies

60. Attenuated laboratory strain of rabies virus is called

a. Fixed virus
b. Street virus
c. Latent virus
d. Virulent virus

61. Intravascular elevation of nitrogenous waste products is called

a. Azoturia
b. Azotaemia
c. Gout
d. None of the above

62. Epidemiologists define disease occurrence in terms of

a. Agent
b. Host
c. Environment
d. All of the above

63. Virulence is known as

a. Unability to cause clinical disease
b. Ability to cause severe disease
c. The ability to evoke an immune response
d. All of the above

64. An infectious agent may cause

a. No infection
b. Subclinical infection
c. Clinical infection
d. All of the above

65. Septicemia is

a. Acute illness caused by agents circulating in the blood
b. Infection in a previously healthy person
c. Caused by secondary infection
d. Acute illness caused by Mycoplasma and viruses

66. The incubation period is the interval between:

a. Appearance of clinical symptoms and death
b. The time of infection and appearance of clinical symptoms
c. Time of infection and appearance of antibodies
d. Time of infection and the appearance of IgM agent specific immunoglobulins

67. A "fomite" is

a. An agent conducting aerosol
b. A blanket, door handle or other inanimate article on the surface of which the agent resides
c. A vector between an arthropod and the susceptible host
d. An agent bearing substance that is eaten or drunk

68. Which statement is true for a gram-positive organism

a. Is a bacteria
b. Retains crystal violet dye
c. Have mycolic acid in cell wall
d. All of the above

69. Which component of the humoral immune system responds first to an antigen?

a. IgA b. IgE
c. IgG d. IgM

70. Activation of a T cells requires

a. A foreign antigen
b. An antigen-presenting cell
c. An initial humoral immune response
d. Both a and b

71. The main cell types of the innate immune system is/are

a. Macrophages
b. Dendritic cells
c. NK cells
d. All of the above

72. Fried egg colonies are characteristic of

a. Anthrax bacilli
b. Clostridium spp.
c. Mycoplasma spp.
d. Nocardia spp.

73. The image produced by bone on the ultrasound machine monitor will be

a. Hypo echoic
b. Hyperechoic
c. Anechoic
d. None of the above

74. The pregnancy diagnosis by ultrasound in bitch can be done as early as

a. 38 days b. 45 days
c. 55 days d. 10 days

75. Fredt Ramsted pyloromyotomy is used to correction of

a. Polyric stenosis b. GDV
c. Gastric ulcer d. Otitis media

76. Ground glass appearance of radiograph seen in

a. Fracture b. Ascites
c. Gastric ulcer d. dislocation

77. Ping sound heard in

a. LDA
b. TRP
c. Caecal dilation
d. Diaphragmatic hernia

78. Sausage like mass on per rectal examination in LA

a. Prolapse b. Hernia
c. Intussusceptions d. Rectal tears

79. Slab fractures are common in

a. Accessary carpal and tarsal
b. Ulna
c. Radius
d. Metatarsal Rectal tears

80. Horn cancer is characterized by

a. Cauliflower like growth
b. Bull eye in exfoliative cytology
c. Cell nests
d. All of the above

81. 'Tall R' wave in ECG denotes

a. Right ventricular enlargement
b. Bilateral ventricular enlargement
c. Left ventricular enlargement
d. Bilateral atrial enlargement

82. Tigroid heart is pathognomonic lesion in

a. FMD b. Rinderpest
c. Bluetongue d. PPR

83. Haemoptysis means presence of blood in

a. Urine b. Sputum
c. Vomitus d. Feces

84. Lactation tetany in cattle is due to

a. Hypoglycemia
b. Hypomagnesaemia
c. Hypocalcemia
d. Hypophosphataemia

85. Iron deficiency anaemia is more common in

a. Calves b. Lambs
c. Piglets d. Kittens

86. Hydrocyanic acid (HCN) poisoning is results in

a. Anoxic anoxia
b. Anaemic anoxia
c. Histotoxic anoxia
d. Stagnant anoxia

87. The antidote for Organophosphate poisoning is

a. Atropine sulphate with oximes
b. Calcium borogluconate
c. Sodium thiosulphate
d. Methylene blue

88. Significant amount of delta bilirubin in plasma suggests

a. Acute hepatitis
b. Hepatic necrosis
c. Cholestasis
d. Cirrhosis

89. Goose stepping in pigs is characteristic sign of

a. Thiamine deficiency
b. Calcium deficiency
c. Phosphorus deficiency
d. Pantothenic acid deficiency

90. Peat scours in caves is due to deficiency of

a. Calcium
b. Selenium and Vit. E
c. Copper
d. Cobalt

91. Eclampsia in mares is caused by

a. Hypoproteinemia
b. Hypophosphatemia
c. Hypomagnesemia
d. Hypocalcemia

92. Papple shaped abdomen is characteristic of

a. Traumatic reticuloperitonotis
b. Omasal impaction
c. Abaomasal displacement
d. Vagal indigestion

93. Which of the following is having high therapeutic value in gastric ulcers of dogs?

a. Sucralfate
b. H_1 blockers
c. Cisapride
d. Metoclopramide

94. The bone which is a part of axial skeleton is

a. Femur
b. Tibia
c. Sacrum
d. Humerus

95. A pully like structure seen on the bone is termed as

a. Trochanter b. Trochlea
c. Spine d. Condyle

96. Drug of choice for treatment of luteal cyst in cow is

a. Estrogen Preparation
b. LH Preparation
c. Progesterone Preparation
d. $PGF_2\alpha$ Preparation

97. Highest Percentage embryo mortality occurs in between

a. 1-7 days of pregnancy
b. 35-40 days of pregnancy
c. 10-30 days of pregnancy
d. 40-275 days of pregnancy

98. Average incidence of infertility in organized cattle farm is

a. 5-10 percent b. 1-2 percent
c. 10-15 percent d. 15-20 percent

99. Lactational anoestrus is due to

a. Increased level of Prolactin
b. Increased level of Oestrogen
c. Increased level of FSH
d. Increased level of GnRH

100. Cuboni test is highly accurate in mare when applied in between

a. 40-120 days of gestation
b. 120-270 days of gestation
c. 17-21 days of gestation
d. 150-300 days of gestation

101. Feline Panleukopaenia is also known as
a. Feline distemper
b. Feline enteritis
c. Agranulocytosis
d. All of the above

102. Feline panleukopaenia virus is closely related antigenically to
a. Canine Parvovirus 2
b. Canine Coronavirus 2
c. Canine Morbillivirus 2
d. Canine Adenovirus 2

103. Lesions of tuberculosis in deer is commonly seen in
a. Lymph nodes b. Lungs
c. Bone marrow d. Intestine

104. Foot and mouth disease is not seen in
a. Wild boar b. Elephant
c. Deer d. None of the above

105. Infected rodents shed hantavirus in
a. Saliva b. Urine
c. Faeces d. All of the above

106. Lower eyelid is desensitized by
a. Infraorbital nerve block
b. Supraorbital nerve block
c. Auriculopalpebral nerve block
d. Retrobulbar nerve block

107. Which of the following feature is seen with thiopentoneanaesthesia
a. Diffusion hypoxia
b. Glucose effect
c. Muscle relaxation
d. Analgesic effect

108. Which of the following species is more sensitive to xylazine
a. Pig b. Horse
c. Dog d. Buffalo

109. Pervious urachus seen as congenital condition is a
a. Sinus b. Cyst
c. Fistula d. Hernia

110. Which of the following is the most common feature of diaphragmatic hernia in buffalo
a. Impaction of rumen
b. Chronic recurrent Tympany
c. Leukocytosis and shift to left
d. Brisket oedema

111. Preferred incision for castration in dog is
a. Midline postscrotal
b. Midline prescrotal
c. Scrotal ablation
d. Ischial incision

112. Theobromine is
a. 1, 3, 7 trimethyl xantheine
b. 1, 3 dimethyl xanthine
c. 3, 7 dimethyl xanthine
d. 1, 7 dimethyl xanthine

113. A non-steroidal compound with anti-estrogenic effect is:
a. Finasteride
b. Tamoxifen citrate
c. Diethyl stilbeoestrol
d. Flutamide

114. Innovar vet is a combination of
a. Droperidol with Etorphine
b. Etorphine with Acepromazine
c. Acepromazine with Xylazine
d. Fentanyl with Droperidol

115. One of the following antibiotic is contraindicated with barbiturates
a. Chloramphenicol
b. Penicillin
c. Streptomycin
d. None of the above

116. The water turnover in an immature animal is approximately
a. 10% of the body weight
b. 65 ml/kg/day
c. 130 ml/kg/day
d. None of the above

117. Gun metal kidney is seen in poisoning due to
a. Arsenic b. Copper
c. Ferrous d. None of the above

118. The specific antidote of Iron is

a. BAL
b. Penicillamine
c. Desferrioxamine
d. None of the above

119. Bordeaux mixture contamination causes toxicity due to

a. Arsenic
b. Copper
c. Mercury
d. None of the above

120. Farmer's lung is caused by

a. Sililca
b. Asbestos
c. Hay or grain dust
d. Asbestos

121. MBRT is conducted on

a. Pasteurised milk
b. Sterilised milk
c. Raw milk
d. Condensed milk

122. Metazoonosis requiring two vertebrate and one invertebrate hosts

a. Yellow fever
b. Clonorchiasis
c. Paragonimiasis
d. Rabies

123. Obligatory cyclozoonosis

a. Hydatidosis
b. Cysticercosis
c. Rabies
d. Salmonellosis

124. Cause of Scarlet fever from the consumption of infected milk is

a. Exfoliative toxin
b. Erythrogenic toxin
c. Enterotoxin
d. None of the above

125. Boiling test on meat detects

a. Colour
b. Odour
c. PH
d. Flavour

126. Casual reading requires an illumination of

a. 25 Lux
b. 100 Lux
c. 750 Lux
d. 220 Lux

127. Stunning is prohibited in

a. Halal method
b. Jewish method
c. Jataka method
d. Muslim method

128. The disease known as Rag picker's disease is

a. Anthrax
b. Tuberculosis
c. Echynococcosis
d. Cutaneous Larval Migrans

129. Important aflotoxin involved in the intoxication of milk

a. B1 & B2
b. G1 & G2
c. B1 & G1
d. All of the above

130. Observation of the animal made from distance is called

a. Inspection
b. Palpation
c. Percussion
d. Auscultation

131. Leucomalachite green test is used to detect

a. Blood stain
b. Semen
c. Urine
d. None of the above

132. Method in which a part or any organ of body is touched with gentle pressure is called

a. Inspection
b. Palpation
c. Percussion
d. Auscultation

133. The normal ratio of calcium and phosphorus in body is

a. 1 : 2
b. 2 : 1
c. 3 : 1
d. 1 : 3

134. Organ of prehension in dog is

a. Lip
b. Teeth
c. Tongue
d. Fore limb

135. Softening of mature bone

a. Rickets
b. Osteomalacia
c. Osteoperosis
d. Osteodystrophic fibrosa

136. Simple method for assessing bone marrow activity in anaemic patient

a. RBC count
b. WBC count
c. DLC
d. Reticulocyte count

137. Name one enzyme deficiency which cause haemolytic anaemia in dog

a. Pyruvate kinase
b. CPK
c. Erythropoitein
d. Transketolase

138. CSF's protein is detected by

a. Heller's test b. Pandy's test
c. Gmelin test d. Sulkowitch test

139. Snoring respiration is characteristic of

a. Pneumonia
b. Heaves
c. Paralysis of larynx
d. Obstruction of nasal passage

140. Kangaroo sitting position in pigs is due to the deficiency of

a. Riboflavin b. Pantothenic acid
c. Niacin d. Biotin

141. Short jerky inspiration caused by stimulation of phrenic nerve is

a. Hiccough b. Wheeze
c. Roar d. None of this above

142. An example of anodyne expectorant

a. Codein
b. Ammonium chloride
c. Potassium iodide
d. Camphor

143. Neonatal isoerythrolysis is caused by

a. Injection of haemolytic bacterial organism
b. Incompatible blood group reaction
c. Blood protozoan organism
d. None of the above

144. A primary skin lesion

a. Scale b. Ulcer
c. Pustule d. Cyst

145. Frequent dry cough often in paroxysms is seen in

a. Bronchopneumonia
b. Interstitial pneumonia
c. Pneumonia
d. Bronchitis

146. Coggins test is

a. An Agar gel immunodiffusion test
b. An Agglutination test
c. FAT
d. A precipitation test

147. Which of the following is a positive sense DNA virus

a. Influenza virus
b. Infectious bronchitis virus
c. Chicken anaemia virius
d. Coronavirus

148. Reservoir host for pseudorabies is

a. Dog b. Swine
c. Cattle d. Poultry

149. Lumpy skin disease of cattle is caused by

a. Cow pox virus
b. Vaccinia virus
c. Herpes Virus
d. Capripox virus

150. Nested set transcription strategy is a feature of:

a. Arterivirus
b. Torovirus
c. Coronavirus
d. All of the above

Answer Key

1. a	2. b	3. a	4. c	5. a	6. c	7. b	8. d	9. a	10. a
11. c	12. a	13. d	14. a	15. a	16. d	17. c	18. d	19. d	20. c
21. a	22. c	23. a	24. d	25. b	26. b	27. a	28. b	29. c	30. c
31. b	32. b	33. d	34. c	35. b	36. d	37. d	38. a	39. d	40. a
41. c	42. a	43. d	44. a	45. a	46. c	47. b	48. b	49. a	50. c
51. b	52. c	53. c	54. a	55. c	56. b	57. a	58. a	59.c	60. a
61. b	62. d	63. b	64. d	65. a	66. b	67. b	68. d	69. d	70. d
71. d	72. c	73. b	74. a	75. a	76. b	77. a	78. c	79. a	80. a
81. b	82. a	83. b	84. b	85. c	86. c	87. a	88. c	89. d	90. c
91. d	92. d	93. a	94. c	95. b	96. d	97. c	98. a	99. a	100. d
101. a	102. a	103. a	104. d	105. d	106. c	107. b	108. d	109. c	110. b
111. b	112. c	113. b	114. d	115. a	116. c	117. b	118. c	119. b	120. c
121. c	122. b	123. b	124. b	125. b	126. b	127. c	128. a	129. a	130. a
131. a	132. b	133. b	134. d	135. b	136. d	137. a	138. b	139. d	140. d
141. a	142. a	143. b	144. c	145. d	146. a	147. c	148. b	149. d	150. d

MPPSC VAS - 2016

1. Succulent feeds usually contain moisture ranging from

a. 60 to 90% b. 50 to 60%
c. 40 to 45% d. 45 to 50%

2. Most suitable fodder crop for leguminous hay making is

a. Barseem b. Lucerne
c. Cow pea d. All of these

3. The protein digestibility of wheat straw is approximately

a. 0.5% b. 0.0%
c. 1% d. 2%

4. The quality of straw can be improved by

a. Alkali Treatment
b. Urea Treatment
c. Silage making with succulent fodders
d. All of these

5. Goitrogens are usually found in which of the following feed ingredient

a. Groundnut Cake
b. Soybean Cake
c. Mustard Cake
d. All of these

6. The water intake of an adult cattle for every kg of dry matter intake is

a. 2-3 litre b. 3-5 litre
c. 6-7 litre d. More than 7 litre

7. More than of energy value of the diet is provided by the

a. Carbohydrates
b. Fat
c. Protein
d. None of the above

8. Which one of the following domestic animal has lowest capacity of crude fiber digestibility

a. Ruminants b. Horse
c. Pig d. Dog

9. The method of the protecting protein from ruminal degradation is

a. Heat Treatment
b. Use of amino acid analogues
c. Encapsulation of amino acids
d. All of these

10. Protein supplement contains

a. Less than 18% crude protein and more than 20% crude fiber
b. More than 20% Crude protein and less than 18% crude fiber
c. Less than 20% crude protein and less than 18% crude fiber
d. More than 20% Crude protein and More than 18% crude fiber

11. Roughage contains how much crude fiber?

a. Less than 15% b. Less than 18%
c. More than 20% d. More than 18%

12. Encephalomalacia in chick is caused by

a. Vit E deficiency
b. Avian encephalomyelitis virus
c. Vit B1 Deficiency
d. All of these

13. Roan coat colour in short horned castle is an example of which type if gene action

a. Dominance b. Co-dominance
c. Recessive d. None of the above

14. The father of animal breeding is

a. Bateson b. Charles Darwin
c. Mendel d. Robert Bakewell

15. When a gene controls two or more traits this property of gene is known as

a. Plieotropy b. Heterotropy
c. Monotropy d. None of these

16. Rampur Bushair is a breed of

a. Pig b. Goat
c. Cattle d. Sheep

17. Crossing of the two inbred lines of different breeds is called as

a. Cross Breeding b. In cross breeding
c. Inbreeding d. Line Breeding

18. Barbari breed is originated from

a. India b. South Africa
c. East Africa d. Palestine

19. The inbred lines are developed mainly for crossing them to take advantage of

a. Hybrid vigour
b. Heterosis
c. Both hybrid vigour and heterosis
d. None of these

20. The Heritability of number of legs in dairy cattle is

a. Zero b. 0.5
c. 0.75 d. 1.0

21. The contribution of offspring to the next generation in selection experiments is called

a. Fitness b. Adaptive Value
c. Selective Value d. All of these

22. The observed value of a trait measured on an individual is called as

a. Genotypic Value
b. Phenotypic Value
c. Karyotypic Value
d. None of these

23. Niang Megha is a breed of

a. Indigenous goat
b. Exotic Pig
c. Indigenous Pig
d. Indigenous Sheep

24. Response to selection is affected by

a. Heritability of the Trait
b. Intensity of selection
c. Phenotypic standard deviation
d. All of these

25. The most dwarf breed of cattle is

a. Vechur b. Malvi
c. Siri d. Hallikar

26. Ideal calving interval in cattle is

a. 14 Months b. 6 Months
c. 4 Months d. 2 Years

27. The desirable slope of floor in tail to tail system is

a. 1:30 b. 1:40
c. 1:50 d. 1:60

28. Sty is the place to keep

a. Young calves b. Goat
c. Sheep d. Pig

29. For maximum growth rate in rabbit minimum crude fiber in ration should be

a. 10% b. 8%
c. 6% d. 4%

30. Manger length for a cow should be

a. 20-24 inch b. 24-30 inch
c. 15-20 inch d. More than 30 inch

31. Best rabbit breed for production of fur is

a. British Angora b. Russian Angora
c. German Angora d. All of these

32. Budgeting, a tool of dairy farm management includes

a. Comparative budgeting
b. Annual budgeting
c. Partial budgeting
d. All of these

33. The example of baggage type of camel is

a. Desert Camel b. Reverine Camel
c. Riding camel d. All of these

34. In an organized dairy farm the calves are separated from dams and maintained in individual pens or stalls normally up to the age of

a. 4 Weeks b. 5 Weeks
c. 6 Weeks d. 8 Weeks

35. Bropkas, Herdsman, Manage which species of animal?

a. Mule b. Ass
c. Yak d. None of these

36. Debeaking is best done at the age of

a. 1st day b. 7th day
c. 10th day d. 14th day

37. The average egg production of an improved strain of White Leghorn is approximately

a. 300 eggs per year
b. 100 eggs per year
c. 50 eggs per year
d. 200 eggs per year

38. Longer incubation period is generally observed in case of

a. Large size eggs
b. Older eggs at setting time
c. Eggs from hens with longer duration in production
d. All of these

39. Unhealed naval or mushy chicks may be caused by the following reasons

a. Unsanitary hatchery conditions
b. Unsanitary incubator conditions
c. Omphalitis
d. All of these

40. From the health management point of view the flow of on-farm traffic must be directed

a. From Oldest to youngest birds
b. From Youngest to oldest birds
c. With no set pattern
d. None of these

41. Which of the light management programme is not recommended for growing pullets?

a. Decreasing light b. constant light
c. Increasing light d. None of these

42. What type of feasibility report is necessary before starting or planning a poultry project?

a. Technical b. Economical
c. Social/ Environmental d. All of these

43. To record the temperature in a brooder house the thermometer is placed above the litter at a height of

a. 5 cm b. 10 cm
c. 15 cm d. 20 cm

44. Which of the following is not a egg quality trait

a. Shape of the egg b. Shell thickness
c. Yolk Index d. Broodiness

45. On which type of floor breeding stock of poultry should be reared for better Fertility

a. Wired floor b. Slat floor
c. Deep litter d. None of these

46. Pindi, a type of khoa, is used to prepare which specific sweet?

a. Kalakand b. Gulabjamun
c. Rosagulla d. Burfi

47. Which of the following breed of poultry is well known for egg production

a. Cornish b. Aseel
c. Kadaknath d. White leg horn

48. Lal dahi, a preparation popular in eastern region of india is which type of dahi?

a. Salted dahi b. Sweetend dahi
c. Plain stored dahi d. None of these

49. Normally single toned milk should contain how much fat percentage?

a. 3% b. 4.5%
c. 1.5% d. 5%

50. Clotted milk is the synonym of which Indian milk product?

a. Mawa b. Kulfi
c. Rabri d. Basundi

51. Stale or sour flavor usually develops at what temperature of storage of khoa?

a. 24-30°C
b. 5-10°C
c. 31-35°C
d. Refrigerated temperature

52. The defect caused by un-dissolved coarse salt in butter is known as

a. Streaky b. Sticky
c. Grainy d. Gritty

53. For preventing oxidized or metallic flavor, the butter oil must be stored in which type of container

a. Aluminum/ Stainless steel vessel
b. Copper alloy vessels
c. Copper vessels
d. Iron Vessels

54. Which one of the following is not the cause of churning difficulties?

a. Excessive hardness of fat
b. Excessive thin Cream
c. Large Sized fat globules
d. Excessive low churning temperature

55. Homogenization of ice cream milk is essential because it

a. Lengthens ageing period
b. Prevent fat separation during ageing
c. Reduces whipping ability
d. All of these

56. How many kg of salt will be required to be added in kg fat for making butter containing salt assuming fat in the butter?

a. 4.0 b. 2.0
c. 2.5 d. 5.0

57. For handling horses, the handler should approach the horse at an angle of

a. 30° b. 45°
c. 15° d. Zero degree

58. Which international agency is not directly involved in veterinary public health activities?

a. OIE b. FAO
c. WHO d. None of these

59. Majority of the slaughter facilities that exist in India are

a. Unhygienic b. Hygienic
c. Suitable d. Up to date

60. Intestinal mucus membrane from healthy animal is used to manufacture which pharmacological preparation?

a. Relaxin b. Growth Hormone
c. Heparin d. Nor adrenaline

61. The effect of radiation on biological material is measured in

a. curie b. rem
c. rad d. decibel

62. Permissible upper limit of arsenic in drinking water of livestock in mg/lit. is

a. 0.8 b. 0.6
c. 0.4 d. 0.2

63. For how much time water should be boiled to destroy micro organisms and to make the dissolved impurities harmless?

a. 15 to 20 minutes b. 5 minutes
c. 7 minutes d. 10 minutes

64. Which chemical is used for removing suspended impurities in water?

a. Pot. Permanganate
b. Bleaching powder
c. Chlorine
d. Alum

65. Slaughter bleeding time for sheep and pig is

a. More in pigs than sheep
b. More in Sheep than Pigs
c. Equal in both
d. None of these

66. Which one is non-projected display type visual aid?

a. Flash Cards b. Exhibits
c. Flip Charts d. Flannel Graph

67. The Philosophy of extension is

a. How to think b. What to think
c. Directed to work d. All of these

68. In extension education learners are

a. Having common goal
b. Homogenous
c. Heterogeneous
d. None of these

69. Gyandoot project was launched in tribal dominated rural area of Madhya Pradesh in the year

a. 1979 b. 1989
c. 1999 d. 2000

70. TRYSEM was introduced in the year

a. 1963 b. 1979
c. 1989 d. 2000

71. The concept of extension education is

a. An applied science
b. Defined as educational process
c. A behavioral science
d. All of these

72. Different techniques are used to access the situation (situational analysis) in program planning process farmers participation is maximum in

a. PRA b. RRA
c. Survey d. Schedule

73. NES was launched in the year

a. 2000 b. 1979
c. 1953 d. 1952

74. Extension education, a participatory process, involves

a. Five independent steps
b. Five inter-related steps
c. Six independent steps
d. Six inter-related steps

75. To support the cross breeding program five central cattle breeding farms have been established for raising high quality bulls of

a. Sahiwal, HF and Murrah
b. Sahiwal, Jersey and Murrah
c. Red Sindhi, HF and Murrah
d. Red Sindhi, Jersey and Murrah

76. In fowl the pygostyle is found in the vertebrae of

a. Thoracic b. Carvical
c. Coccygeal d. Sacral

77. The splanchnic skeleton of the ox is

a. Os-rostrum b. Os-penis
c. Os-cordis d. Os-phrenic

78. The manisci are present in which joint

a. Hip b. Stifle
c. Hock d. Shoulder

79. The muscles attached on the bone surface

a. Cardiac muscles b. Smooth muscles
c. Skeletal muscles d. All of these

80. The number of chromosomes are reduced to half during

a. Mitosis b. Meiosis
c. Interphase d. None of these

81. Fertilized ovum immediately starts dividing into series of mitosis by a process called

a. Blastulation b. Cleavage
c. Gastrulation d. Nevrulation

82. Fertilized ovum is divided into number of cells by mitotic division by the process of

a. Bastulation b. Cleavage
c. Gastrulation d. None of these

83. Oxytocin has specific effects on

a. Smooth muscles of uterus
b. Myoepithelial cells of mammary gland
c. Facilitates parturition
d. All of the above

84. Maintenance of milk secretion is known as

a. Galactopoiesis b. Lactogenesis
c. Mammogenesis d. Galactogenesis

85. Pepsinogen and HCl is secreted in ruminants by

a. Omasum b. Abomasum
c. Reticulum d. Ruman

86. The basic unit of gas exchange in birds is

a. Primary bronchi b. Secondary bronchi
c. Parabronchi d. Air sacs

87. The major cation of intracellular fluid is

a. Na b. K
c. Mg d. Mn

88. Hypovolemic shock may be due to

a. Haemorrhage
b. Trauma
c. Both Haemorrhage and Trauma
d. None of these

89. Ambient hypoxia occurs due to

a. Low pO_2 in atmosphere
b. High pO_2 in atmosphere
c. Shortage of functional hemoglobin
d. None of these

90. Mannitol is contra indicated in dogs suffering from congestive heart failure because it

a. Increases blood volume and precipitates pulmonary edema
b. Causes hypovolemia with excess excretion of Na+, K+ and Cl- ions
c. Both Increases blood volume and precipitates pulmonary edema & Causes hypovolemia with excess excretion of Na+, K+ and Cl- ions
d. None of the above

91. Tamoxifen is an antiestrogen used mainly in the treatment of

a. Mammary gland carcinoma in bitches
b. Horn cancer in bullocks
c. Reduced libido in males
d. None of these

92. The dose rate at which urea is lethal for starved cattle is

a. 1 - 1.5 g / kg b.wt
b. 0.33 - 0.44 g / kg b.wt
c. 0.22 - 0.30 g / kg b.wt
d. None of the above

93. Buparvaquone is a drug of choice for the treatment of

a. Tick infestation
b. Tape worm infection
c. Theileria infection
d. Babesiosis

94. Sui poisoning is the common name for

a. Dhatura poisoning
b. Strychnine poisoning
c. Heavy metal poisoning
d. Abrus precatorius poisoning

95. Hepatatotoxicity and photosensitization in grazing livestock is caused due to ingestion of

a. Lantana camara
b. Naricum oleandir
c. Digitalis purpurea
d. Beta vulgaris

96. The white pulp and red pulp are found in the microsection of

a. Kidney
b. Pancreas
c. Spleen
d. Liver

97. One of the following is an anticoccidial drug used in poultry

a. Amprolium
b. Acriflavin
c. Both Amprolium and Acriflavin
d. None of these

98. Restriction enzymes capable of making internal cuts in a DNA molecule is called

a. Restriction exonuclease
b. Restriction endonuclease
c. Both Restriction exonuclease and Restriction endonuclease
d. S1 nuclease

99. Mechanism of intake of recombinant plasmids into a cell is called

a. Transduction
b. Transformation
c. Conjugation
d. Both Transduction and Transformation

100. PCR was invented by

a. Watson and Eric
b. Paul Berg
c. Kary Mullis
d. Kohler and Milstain

101. On the basis of maternal foetal barrier, type of placenta in bitch is

a. Syndesmochorial
b. Haemochorial
c. Epithelio chorial
d. Endotheliochorial

102. Post- service pyometra in cow is usually caused by

a. Campylobacter fetus
b. Brucella abortus
c. E.coli
d. Trichomonas fetus

103. Aschhein - Zondek test is the method of Pregnancy diagnosis in

a. Bitch
b. Cattle
c. Mare
d. Sow

104. The second stage of parturition in a cow lasts for

a. 0.5 - 1 hr b. 6 - 8 hrs
c. 24 hrs d. 4 hrs

105. Synchronization of estrus can be achieved by administering

a. Single injection of FSH
b. Single injection of GnRH
c. Combination of FSH and GnRH
d. Two doses of $PGF_{2\alpha}$ at 11 days interval

106. When sperm concentration is less in the semen sample the condition is called as

a. Hypospermia b. Asthenozoospermia
c. Oligozoospermia d. Teratozoospermia

107. Testosterone hormone is produced from

a. Spermatogonia b. Sertoli cells
c. Leydig cells d. Medusa cells

108. Fructose is predominantty present in the semen of

a. Dog b. Stallion
c. Cow bull d. Buffalo bull

109. Testicular hypoplasia a condition in buffalo bull is

a. Acquired b. Congenital
c. Hereditary d. Environmental

110. Lack of sexual interest in female immediately following copulation is called as

a. Intromisson b. Dismounting
c. Impotentia coeundi d. Refractoriness

111. Disorder of eye in which additional cilia emerges from the openings of Meibomian glands of eye is known as

a. Ectopic cilia b. Distichiasis
c. Trichiasis d. None of These

112. Surgical procedure indicated for mass lesions and caecal impaction or inversion called

a. Typhlectomy b. Colotomy
c. Caecocystensis d. None of these

113. Extrapelvic urethral structures in dogs are best managed by

a. Ureathrostomy
b. Resection and anastomosis
c. Extrapelvic cystourethral anastomosis
d. None of these

114. To visualize details of different structures, a good radiograph is expected to have

a. Long scale contrast
b. Short scale contrast
c. High radiographic density
d. Low radiographic density

115. Telescoping of a part of intestine distally into an adjacent portion is called as

a. Volvulus b. Intussusception
c. Torsion d. None of these

116. Auriculopalpebral nerve block results into

a. Loss of sensation of eyelids
b. Motor Paralysis of eyelids
c. Blockade of sensory and motor nerve
d. None of these

117. Conformation in which the entire fore limb from the body to ground is too far forward when viewed from the side is called as

a. Comped in front
b. Standing under infornt
c. Open knees
d. Comped behind

118. If a horse refuses to move unless forces, the lameness is graded as

a. grade - 1 b. grade - 2
c. grade - 3 d. grade - 4

119. Bunnell suture technique is used for

a. Muscle repair
b. Tendon repair
c. Ligament repair
d. Skin repair

120. The chief indication for electrotherapy are

a. Paralysis and muscular atrophy
b. Paralysis and torticolis
c. Paralysis and muscular tremors
d. None of these

121. Fluroscopy was invented by
a. Thomas A. Edison in 1896
b. W.C. lord Roentgen in 1895
c. J.J. Thompsan in 1897
d. J.J. Thompsan in 1913

122. The basis of diagnostic ultrasound is
a. Absorption of ultrasound energy
b. Reflection of ultrasound waves
c. Scattering of ultrasound waves
d. All of these

123. Among the following, which one is the most dangerous type of hernia
a. Gastorcele
b. Entro-epiplocele
c. Strangulated hernia
d. None reducible hernia

124. In which types of animals atropine makes the salivary secretions viscid?
a. Canines
b. Bovines
c. Equines
d. Felines

125. Grid is used to prevent the following from reaching the X-ray film during exposure
a. Primary radiation
b. Scattered radiation
c. Both Primary radiation & Scattered radiation are true
d. Both Primary radiation & Scattered radiation are false

126. Using a diseased animal for work is punishable under
a. Prevention of Cruelty against Animals Act 1960
b. Prevention of Cruelty against Animals Act 1965
c. Prevention of Cruelty against Animals Act 1970
d. Prevention of Cruelty against Animals Act 1975

127. Which of the following formula is used to calculate total solid (TS) and solid not fat (SNF) content of milk
a. Richmond's formula
b. Bobcock's formula
c. Fleischmann's formula
d. All of these

128. Mercuric nitrate solution is used for the detection of adulteration of milk with
a. Gelatin b. Starch
c. Vegetable oil d. None of these

129. Which to the following types of meats contains firm and fine muscle fibers
a. Horse meat b. Fish meat
c. Poultry meat d. None of these

130. The animal welfare board was established in the year
a. 1952 b. 1962
c. 1982 d. 1992

131. Which of the following is not used as a preservative during post-mortem examination of vetero-legal cases?
a. Common salt b. Alcohol
c. Formalin d. None of these

132. For internal examination during post-mortem examination of equine, the carcass should be placed
a. Right side down
b. Left side down
c. In sterna recumbency
d. in dorsal recumbency

133. Under the law, manufacture and sale of which of the following is considered to be a crime
a. Adultrated drugs b. Misbranded drugs
c. Spurious drugs d. All of these

134. Which of the following specimens should be submitted for chemical analysis from a suspected case of nitrate poisoning
a. Whole blood b. Kidney
c. Liver d. Urine

135. The phenomenon of rigor mortis commences from which of following body parts
a. Head and neck
b. Shoulder and abdomen
c. Extremities of forelimbs
d. Extremities of hindlimbs

136. The term, "Skin leucosis" is used for which of the following diseases

a. Fowl pox b. Marek's disease
c. Lymphoid feucosis d. None of these

137. Which of the following is added as preservative to milk samples that are to be later used for laboratory examination

a. Toluene b. Formaline
c. Potassium dichromate d. Thymol

138. Which of the following is not a major *mastitis* pathogen

a. Staphylococcus aureus
b. Streptococcus agalactia
c. Escherichia coli
d. Staphylococus Hyicus

139. Which of the following triggers multiplication of *Brucella abortus* organisms

a. Erythymol b. Erythretol
c. Erytol d. Ethambutol

140. Which of the following is used for staining smears for the diagnosis of tuberculosis

a. Giemsa stain b. ZN stain
c. EMB stain d. Seller's stain

141. The usual frequency of occurrence of a disease is known as

a. Endemic b. Sporadic
c. Epidemic d. Pandemic

142. Which of the following is used for post bite anti-rabies vaccination schedule

a. 0, 3rd,7th, 14th & 30th day
b. 0, 3rd, 7th, 14th,30th & 90th day
c. 0, 3rd ,7th, 14th & 28th day
d. 0, 3rd ,7th, 14th, 28th & 90th day

143. Mc'enjie Toothbrush technique is used for the diagnosis of which of the following conditions

a. Canine atopy
b. Canine pyoderma
c. Dermatophytosis
d. Flea allergic dermatitis

144. Which of the following is a commensal organism that inhabits canine skin and ear canals and produces disease under favorable conditions

a. Malassezia pachydermatis
b. Staphylococcus intermedius
c. Sarcoptes scabiei var. canis
d. Otodectes Cyanotis

145. Enrofloxacin is not used to treat bacterial infections in young animals as it is

a. Oto toxic b. Nephrotoxic
c. Neurotoxic d. Chondrotoxic

146. Which of the following is the smallest virus of animal origin

a. Pox virus b. FMD virus
c. Blue tongue virus d. Corona virus

147. The amount of IgG that a neonatal calf receives through colostrum should be equal to

a. 50 gm /45 kg body wt. of calf
b. 75 gm /45 kg body wt. of calf
c. 100 gm /45 kg body wt. of calf
d. 150 gm /45 kg body wt. of calf

148. For the treatment of babesiosis in cattle, the dose of Diminazine is

a. 8 mg/kg body wt.
b. 10 mg/kg body wt.
c. 12 mg/kg body wt.
d. 15 mg/kg body wt.

149. For the treatment of trypanosomiasis (surra) in pig, camel and buffalo, the curative dose of antrycide (Qinapyramine sulfate) is

a. 4 mg/kg body wt.
b. 8 mg/kg body wt.
c. 10 mg/kg body wt.
d. 15 mg/kg body wt

150. Hydatidosis is caused due to intermediate stage of which of the following parasites

a. Taenia solium
b. Moniezia sp
c. Echinococcus granulosus
d. Tenia multiceps

Answer Sheet

1. a	2. b	3. b	4.d	5. c	6. b	7. a	8. c	9. d	10. b
11. d	12. a	13. b	14.d	15. a	16. d	17. b	18. c	19. c	20. a
21. d	22. b	23. c	24. d	25. a	26. a	27. b	28. d	29. a	30. a
31. c	32. d	33. b	34. d	35. c	36. a	37. a	38. d	39. d	40. b
41. c	42. d	43. b	44. d	45. c	46. d	47. d	48. b	49. a	50. c
51. b	52. d	53. a	54. c	55. b	56. d	57. b	58. d	59. a	60. c
61. b	62. d	63. a	64. d	65. a	66. b	67. a	68. c	69. d	70. b
71. d	72. a	73. c	74. b	75. d	76. c	77. c	78. b	79. c	80. b
81. b	82. b	83. d	84. a	85. b	86. c	87. b	88. c	89. a	90. c
91. a	92. a	93. c	94. d	95. a	96. c	97. a	98. b	99. b	100. c
101. d	102. d	103. c	104. a	105. d	106. b	107. c	108. c	109. c	110. d
111. b	112. a	113. a	114. a	115. b	116. b	117. a	118. d	119. b	120. a
121. a	122. b	123. c	124. b	125. b	126. a	127. d	128. a	129. c	130. b
131. c	132. a	133. d	134. a	135. a	136. b	137. c	138. d	139. b	140. b
141. a	142. d	143. c	144. a	145. d	146. b	147. c	148. c	149. a	150. c

Kerala Public Service Commission - 2017

1. **Rank of India in world milk production**
   a. 1 b. 2
   c. 3 d. 4

2. **Which of the following is not an epimer of glucose?**
   a. D Mannose b. D Galactose
   c. D Fructose d. L Idose

3. **Intra-site regression of offspring on dam estimates**
   a. Heritability
   b. Repeatability
   c. Half of heritability
   d. Twice the heritability

4. **When a vaccine is given orally, which is the type of immunoglobulin generated in the largest quantity?**
   a. IgM b. IgG
   c. IgA d. IgD

5. **Bowman's corpuscles are found in**
   a. Kidney b. Liver
   c. Lung d. Ovary

6. **A chemical method of meat species identification among the following**
   a. Refractive index
   b. Hair test
   c. Glycogen test
   d. RIA

7. **Vencobb-is a commercial strain of _____.**
   a. Broiler chicken
   b. Layer chicken
   c. Layer duck
   d. Turkey

8. **The disease which is a non-obiligatory cyclozoonoses among the following**
   a. Hydatidosis
   b. Anthrax
   c. Rabies
   d. Cysticercosis

9. **Which species of animal is regarded as the mixing vessel for influenza viruses?**
   a. Cattle b. Pigs
   c. Horses d. Dogs

10. **The process of attachment of embryo to the uterine wall is**
    a. Implantation
    b. Invagination
    c. Involution
    d. None of the above

11. **Cats are more susceptible to NSAID toxicity as they are deficient in**
    a. Glucuronyl transferase
    b. Glutathione transferase
    c. Phosphodiesterase
    d. Acetyl cholinesterase

12. **The hemolytic uremic syndrome and hemolytic colitis are conditions associated with**
    a. Leptospirosis
    b. Clostridium difficile
    c. Escherichia coli
    d. Helicobacter pylori

13. **Buffalo breed with white markings on extremities and walled eyes**
    a. Murrah b. Jaffarabadi
    c. Neeli-Ravi d. Mehsana

14. **Demodectic mange can be controlled by**
    a. Fenbendazole b. Ivermectin
    c. Metronidazole d. All of the above

15. **Which of the following is an omega- 3 fatty acid ?**
    a. Linolenic acid b. Linoleic acid
    c. Oleic acid d. All of the above

16. **Haemophilia in man is an example of**
    a. Sex linked inheritance
    b. Sex limited inheritance
    c. Sex influenced inheritance
    d. Incomplete dominance

17. The optimum brooding temperature during first week of age in broiler chicken is

a. 27°C b. 30°C
c. 33°C d. 37°C

18. Loose arrangement of mitochondrial sheath in spermatozoa results in condition called

a. Dag defect
b. Knobbed sperm
c. Diadem defect
d. Cork screw defect

19. First limiting amino acid in maize-soya based diet for layer chicken is

a. Cystine b. Lysine
c. Methionine d. Glycine

20. Intermediate host of spirocerca lupi

a. Snails
b. Lizard
c. Coprophagus beetles
d. Fishes

21. Which of the following is not a phospholipid?

a. Lecithin b. Cephalin
c. Cardiolipin d. Ceramide

22. Grading up produces pure breed in how many generations

a. 2-4 b. 4-5
c. 10-12 d. 7-8

23. Pecten is a vascular structure present in the eye of

a. Herbivores b. Carnivores
c. Omnivores d. Birds

24. The Planning Commission of India has now been replaced by

a. Nirvachan Aayog b. NITI Aayog
c. Lok Seva Aayog d. Yojana Aayog

25. Red fever in cattle is caused by

a. Entamoeba bovis
b. Eimeria bovis
c. Trypanosoma evansi
d. Babesia bigemina

26. Nucleotide inosine contains the nitrogenous base

a. Adenine b. Guanine
c. Hypoxanthine d. Xanthine

27. The most robust and widely used measure of dispersion

a. Variance
b. Mean deviation
c. Standard deviation
d. Quartile deviation

28. Incubation period of goose egg is _____ days

a. 18 b. 21
c. 24 d. 29

29. The round ligament of the bladder is the obliterated part of which artery

a. Umbilical artery
b. Vesicular artery
c. Urogenital artery
d. Internal pudendal artery

30. Which amendment to the constitution laid panchayat raj on a firm footing?

a. 72nd amendment
b. 74th amendment
c. 71st amendment
d. 73rd amendment

31. Standing space required for an adult crossbred cow in stanchion system

a. 1.3 m × 1.1 m
b. 1.4 m × 3.5 m
c. 1.6 m × 2.9 m
d. 1.8 m × 1.2 m

32. Anal pruritis in dogs is associated with

a. Dipylidium caninum
b. Toxocara canis
c. Ancylostoma caninum
d. Diphyllobothrium latum

33. Assay of which of the following enzymes is not useful in the diagnosis of myocardial infarction?

a. ALT b. AST
c. CPK d. LDH

34. **Rho factor is required for the termination of**

a. Replication b. Transcription
c. Translation d. Transversion

35. **The fungal agent found abundantly in pigeon droppings is**

a. Blastomyces dermatitidis
b. Histoplasma capsulatum
c. Cryptococcus neoformans
d. Sporotrichum schenkii

36. **Which among the following is not a splanchnic bone?**

a. Os penis b. Os cordis
c. Os pedes d. Os phrenic

37. **Maximum permissible level of aflatoxin in layer chicken feed as per BIS (2is**

a. 5 ppb b. 20 ppb
c. 1 ppm d. 2 ppm

38. **The tendency of considering one's own culture superior to that of others is termed as**

a. Ethnocentrism b. Xenocentrism
c. Culture trait d. Convention

39. **The FSSAI recommended MRL of DDT in meat is**

a. 12 ppm b. 7 ppm
c. 2 ppm d. 1 ppm

40. **Which one is the mesogenic vaccine strain of New Castle Disease Virus?**

a. F b. K
c. Lasota d. R_2B

41. **Forelimb is connected to the trunk in cow by means of**

a. Synchondrosis b. Symphysis
c. Synarthrosis d. Synsarcosis

42. **Etiological agent of barbone disease**

a. Pasteurella maltocida
b. Brucella melitensis
c. Mycoplasma bovis
d. Escherichia coli

43. **Net ATP produced by complete oxidation of one molecule of glucose to CO_2 and Hin liver is**

a. 32 b. 34
c. 35 d. 36

44. **Corpus Luteum of pregnancy is termed as**

a. Corpus luteum spurium
b. Corpus luteum verum
c. Corpus luteum haemorragicum
d. Corpus luteum albicans

45. **Third ventricle is connected to the Fourth ventricle through**

a. Aqueduct of Sylvius
b. Lateral ventricle
c. Foramina of Luschka
d. Foramen of Monro

46. **In SGSY, the approach followed for beneficiary selection is**

a. Individual approach
b. Area approach
c. Antyodaya approach
d. Group approach

47. **Potency of inhalant anaesthetics is expressed as**

a. MIC b. MAC
c. MBC d. MEC

48. **Sociometric technique is used for**

a. Training of leaders
b. Identification of leaders
c. Structural social change
d. Functional social change

49. **Interstitial nephritis is a feature in**

a. Leptospirosis
b. Colisepticemia
c. Both a and b
d. None of the above

50. **Inflammation of tendon sheath is referred to as**

a. Tendinitis
b. Bursitis
c. Tenosynovitis
d. None of the above

51. Dale's vasomotor reversal is exhibited by

a. Norepinephrine b. Isoproterenol
c. Epinephrine d. Dopamine

52. Species in which preovulatory luteinization of follicle occurs

a. Bovine b. Caprine
c. Feline d. Canine

53. Zepp's operation is indicated in

a. Vestibular disease
b. Otitis media
c. Chronic otitis external
d. All of the above

54. Koch blue bodies are diagnostic of

a. Anaplasmosis b. Ehrlichiosis
c. Theileriosis d. Trypanosomosis

55. Osmotic diuretic is

a. Furosemide b. Mannitol
c. Dopamine d. Fenoldopam

56. The bleeding time required for cattle on the rail bleeding is

a. 30 seconds b. 6 minutes
c. 45 seconds d. 24 hours

57. The example of synergism in microbial spoilage of milk is

a. Streptococcus lactis and Leuconostoc spp.
b. Lactobacillus helviticus and Streptococcus thermophilus
c. Bacillus cereus and Streptococcus thermophilus
d. All of the above

58. The Environmental Protection Act was formulated in the year

a. 1986 b. 1985
c. 1982 d. 1972

59. Lymph node becomes enlarged, inflamed, tense and painful in plague and is called

a. Scrofula
b. Bubo
c. Perinaud's Oculoglandular syndrome
d. Eschar

60. Strawberry lymphnode is the pathognomonic lesion in

a. Swine fever
b. Swine erysipelas
c. Swine flu
d. None of the above

61. Diuretics recommended in cerebral oedema

a. Frusemide b. Mannitol
c. Acetazolamide d. Amiloride

62. Non-hormonal method of synchronization in ewes

a. Flushing b. Weaning
c. Artificial light d. Pheromones

63. Surgery done to preserve of restore a disabled part is called

a. Reconstructive surgery
b. Conservative surgery
c. Plastic surgery
d. None of the above

64. Fruity flavour of milk is associated with

a. Pseudomonas fragi
b. Pseudomonas mucidolens
c. E -coli
d. Streptococcus lactis

65. Toxic shock syndrome is caused by

a. Streptococcus lactis
b. Streptococcus thermophilus
c. Staphyloccus aureus
d. All of the above

66. Byssinosis is a disease condition caused by inhalation of

a. Sugar cane dust b. Cotton fiber dust
c. Grain dust d. Silica dust

67. Solid waste coming out from the sewage treatment plant is called

a. Sullage b. Sludge
c. Sewage d. All of the above

68. Percentage of Iodine present in Tincture of iodine

a. 1% b. 2.5%
c. 5% d. 10%

69. **The individual that continues to disseminate the infectious agent after the clinical signs of the disease have disappeared is**
a. Convalescent carrier
b. Incubatory carrier
c. Subclinical
d. Latent carrier

70. **Heart failure cells are**
a. Intravascular macrophages
b. Kupffer cells
c. Intra alveolar macrophages
d. Type I pneumonocytes

71. **Captopril is used as**
a. Analeptic b. Anticoagulant
c. Anti hypertensive d. Haematinic

72. **Accessory gland present in cats, but not in dogs**
a. Bulbourethral
b. Prostate
c. Seminal Vesicles
d. None of the above

73. **Percentage of Lignocaine used for local anaesthesia**
a. 2% b. 1%
c. 5% d. 10%

74. **Protective titre for rabies neutralizing antibodies in serum**
a. 2.5 IU/ml b. 1.0 IU/ml
c. 2.0 IU/ml d. 0.5 IU/ml

75. **Photosensitisation can occur due to feeding of**
a. Lantana b. Amaranthus
c. Nerium d. Abrus

76. **World Ozone day is celebrated on**
a. April 7 b. April 22
c. September 16 d. June 5

77. **Which of the following is used to reduce gastric acid production?**
a. H1 agonist b. H1 antagonist
c. H2 agonist d. H2 antagonist

78. **Goose stepping gait' in pigs is due to the deficiency of**
a. Nicotinic acid
b. Folic acid
c. Pantothenic acid
d. Choline

79. **White side test is used for diagnosis of**
a. Leptospirosis b. Mastitis
c. Anthrax d. Brucellosis

80. **Which of the following is immuno-stimulant?**
a. Levamisole b. Ivermectin
c. Coumaphos d. All of the above

81. **X rays have the most harmful effect on the**
a. Skin b. Lungs
c. Bone d. Gonads

82. **Conjunctivokeratoplasty is a surgical treatment for**
a. Corneal ulcer b. Cataract
c. Keratitis d. Conjunctivitis

83. **King of fodder crop**
a. Lucern b. Clover
c. Barley d. Berseem

84. **Whirling Psychrometer is used to measure**
a. Wind velocity
b. Specific humidity
c. Radiation
d. Relative humidity

85. **Calves are ideally first dewormed at the age of**
a. 8-10 days b. 3 months
c. 8-10 weeks d. One year

86. **Mulberry heart disease in pigs is due to the deficiency of the vitamin**
a. K b. Biotin
c. Niacin d. E

87. **The type of anaemia in folic acid deficiency**
a. Microcytic b. Aplastic
c. Normocytic d. Macrocytic

88. Fertilization of oocyte occurs in

a. Abdominal cavity b. Uterus
c. Vagina d. Uterine tube

89. Prolactin releasing hormone in chicken

a. VIP b. LH
c. FSH d. Oestrogen

90. Total erythrocyte count in an elephant (millions/micro litre)

a. 3.0 b. 6.0
c. 9.0 d. 12.0

91. ESR (mm/hr.) in a Tusker

a. 30 b. 40
c. 50 d. 60

92. Icterus was very visible in a dog and hence indicates which of the following points to obstructive jaundice?

a. Absence of urine urobilinogen
b. Blood colour urine
c. Dark yellow urine
d. Coffee colour urine

93. A 6.5 year old cocker spaniel with evidence of systolic murmur (no diastolic murmur), pulmonary oedema, left ventricular hypertrophy and exercise intolerance. Give your diagnosis.

a. Pulmonic stenosis
b. Ventricular septal defect
c. Aortic regurgitation
d. Mitral insufficiency

94. The bell of stethoscope is primarily used to listen which heart sound?

a. Low frequency third heart sound
b. High frequency second heart sound
c. Low frequency first heart sound
d. High frequency first heart sound

95. In which animal partial fetotomy is often indicated before version is attempted in transverse ventral presentation?

a. Cow b. Ewe
c. Sow d. Mare

96. Severe bleeding from the uterus of large animals may be controlled by

a. Prolactin b. Oxytocin
c. Progesterone d. Gonadotropin

97. Ideal distance of hatchery away from other poultry houses

a. 100 ft b. 500 ft
c. 50 ft d. ft

98. Incubation period of Muscovy duck

a. 21 days b. 28 days
c. 32 days d. 35 days

99. The dose of Pentobarbitone for dogs

a. 25-30 mg/kg b. 30-45 mg/kg
c. 55 mg/kg d. 100 mg/kg

100. Malignant hyperthermia is associated with anaesthetic agent like

a. Ether b. Halothane
c. Barbiturate d. Chloroform

101. To design the gene for production of wool protein should possess maximum codon coding for

a. Arginine b. Histidine
c. Proline d. Cysteine

102. The largest animal virus

a. Adeno b. Herpes
c. Pox d. Picorna

103. Among the following which one is preferred in neurosurgery?

a. Halothane b. Enflurane
c. Methoxy flurane d. Nitrous oxide

104. Analeptics are

a. Cortical stimulants
b. Medullary stimulants
c. Spinal cord stimulants
d. CNS depressants

105. Creep feeding to piglets is done at

a. 7 days b. 2 days
c. 60 days d. 70 days

106. Denaturation of proteins in chicken occurs in

a. Oesophagus
b. Proventriculus and gizzard
c. Crop and pancreas
d. Small and large intestine

107. Uranoplasty is the surgical treatment for the correction of

a. Hare lip b. Cleft palate
c. Corneal ulcer d. Roaring

108. In which type of cataract, vision is diminished during bright sunlight?

a. Peripheral b. Mature
c. Hypermature d. Central

109. Drug of choice for "Babesia gibsoni" is

a. Clindamycin b. Streptomycin
c. Tetracycline d. Penicillin

110. Toxic amino acid present in Subabul is

a. Mimosine b. Mathionine
c. Toluene d. Cystine

111. The breed of dog in which 'Track leg' is commonly encountered in

a. Dachshund b. Grey hound
c. Doberman d. Dalmatian

112. The animal in which morphine does not produce "pin point" pupil

a. Dog b. Cat
c. Rabbit d. Horse

113. Bunnel Mayer sutures are used for suturing

a. Muscles b. Tendon
c. Skin d. Peritoneum

114. Estimation of MMA in urine helps to detect

a. Co deficiency b. Cu deficiency
c. Mn deficiency d. Zn deficiency

115. Overiectomy after days of gestation does not terminate pregnancy in

a. Cow b. Bitch
c. Mare d. Ewe

116. The order of tissue growth during prenatal period is

a. CNS, Fat, Muscles, Bones
b. Bones, Fat, CNS, Muscles
c. CNS, Bones, Muscles, Fat
d. Fat, Bones, CNS, Muscles

117. Winter coccidiosis in calves is caused by

a. Sarcocystis spp
b. Eimeria stiedae
c. Eimeria christianseni
d. Eimeria zuernii

118. The source of amphistomes infection to ruminants

a. Flies b. Mosquitoes
c. Vegetation d. Land snails

119. The removal of wool around the perennial region and base of tail of an ewe is

a. Ringing b. Tagging
c. Crutching d. Eyeing

120. At what rate of the body weight, whole milk should be fed to calves from 4-days of age?

a. 1/10 b. 1/15
c. 1/20 d. 1/25

121. Slaughter house inspection area should have a light intensity of

a. 220 lux b. 100 lux
c. 50 lux d. 540 lux

122. Mineral rich deposit on the surface of milking equipment is termed as

a. Residue b. Phosphate
c. Calcium d. Milk stone

123. The presence of dead or decaying animal matter in water is indicated by

a. Calcium carbonate
b. Magnesium carbonate
c. Sodium sulphate
d. Ammonia

124. Drinking water should be

a. Soft b. Hard
c. Moderately hard d. Moderately soft

125. The process of removal of skin during slaughter is called

a. Flaying
b. Dehairing
c. Skimming
d. Demasking

126. World Zoonoses day

a. July 6th
b. June 5th
c. June 6th
d. July 8th

127. The National Environmental Engineering Research Institute (NEERI) is located at

a. Pune
b. Delhi
c. Bhopal
d. Nagpur

128. An extremely drug resistant type of tuberculosis

a. EDR-TB
b. XDR-TB
c. EXR-TB
d. ZRT-TB

129. The maximum period animals are allowed to walk per day during transportation

a. 6 hr.
b. 8 hr.
c. 12 hr.
d. 24 hr.

130. The indicator organism for pasteurization

a. Coxiella burnetii
b. Staphylococcus aureus
c. E. coli
d. Coliforms

131. Minimum recommended concentration of free chlorine in chlorinated water

a. 1.0 mg/l
b. 0.5 mg/l
c. 0.005 mg/l
d. 0.05 mg/l

132. Japanese Encephalitis in pigs

a. Asymptomatic in adult pigs
b. Paralysis in adult pigs
c. Photophobia in adult pigs
d. Incoordination in adult pigs

133. Diphyllobothriasis leads to megaloblastic anaemia due to blockage of absorption of

a. Vitamin C
b. Vitamin B1
c. Vitamin B12
d. Vitamin A

134. IPCC stands for

a. International Protocol for Climate Change
b. Intergovernmental panel for Climate Change
c. International Profile for Climate Change
d. Indian Protocol for Climate Change

135. Transplacental transmission from mother to offspring occurs in

a. Q-fever
b. Anthrax
c. Toxoplasmosis
d. KFD

136. The persistent cough associated with ACE inhibitor therapy is due to

a. Prostaglandins
b. Leukotrines
c. Kinnins
d. Rennin

137. Prion is responsible for

a. Mad cow disease
b. Ebola disease
c. Q-fever
d. Marburg disease

138. A type of deep well in which the water rises above the level of ground water

a. Dug well
b. Step well
c. Artesian well
d. Pucca well

139. Crude protein level in broiler finisher ration

a. 18%
b. 20%
c. 22%
d. 23%

140. Ultimate pH of meat

a. 6.5
b. 6.0
c. 5.5
d. 5.0

141. The act of killing in Jewish method is known as

a. Shomer
b. Terepha
c. Schechita
d. Shochet

142. The presence of this antibiotic residue in milk causes aplastic anaemia in children

a. Penicillin
b. Chloramphenicol
c. Tetracycline
d. Sulphmethazine

143. An indirect quality control testing for estimating bacterial density in milk

a. DEFT b. DMC
c. Pyruvate test d. SPC

144. Among the following which is not isotonic?

a. 0.9% sodium chloride
b. 5.0% dextrose
c. 7.5% sodium chloride
d. 0.45% sodium chloride and 2.5% dextrose

145. Iron bacteria in water that clogs iron pipes

a. S.faecalis
b. E.coli
c. Citrobacter
d. Gallionella

146. The smallest geographical area providing uniform conditions of life

a. Biotope
b. Biome
c. Biocoenosis
d. Ecosystem

147. Scientific management of animal waste

a. Seweology b. Copronomy
c. Feedlot d. Engology

148. The definitive host of Echinococcus granulosus is

a. Dog b. Cow
c. Goat d. Rabbit

149. What deficiency leads to "Stepping syndrome" in pigs?

a. Fe b. Cu
c. Mn d. Mg

150. The ME (kcal/kg) content of grower mesh as per BIS specification

a. 2400 b. 2300
c. 2600 d. 3000

151. The stage in pox lesions involved with spread of virus

a. Papule b. Vesicule
c. Macula d. Pastule

152. Deficiency of which ingredient leads to Cannibalism in poultry?

a. Protein free b. Protein rich
c. Fibre free d. Fibre rich

153. The ME (kcal/kg) content of grower mesh as per BIS specification

a. 2400 b. 2300
c. 2600 d. 3000

154. Varocay bodies" are seen in

a. Meningioma b. Schwannoma
c. Neuroblastoma d. Glioma

155. Veterinarian involved in BCG vaccine

a. Calmette b. Dang
c. Guerin d. Eevans

156. The ropiness of milk is caused due to

a. Lactobacillus casei
b. Bacillus subtilis
c. Pseudomonas aeruginosa
d. Bacillus anthrasis

157. Chromosome number in Capra hircus

a. 65 b. 60
c. 55 d. 50

158. First animal to be identified with XXY aberration

a. Dog b. Cat
c. Cattle d. Goat

159. Terminology to denote decreased sperm motility

a. Azoospermia b. Necrozoospermia
c. Asthenozoospermia d. Tertazoospermia

160. Syrupy urine is seen

a. Horse b. Elephant
c. Lion d. Buffalo

Answer Key

1. a	2. c	3. c	4.c	5. a	6. c	7. a	8. a	9. b	10. a
11. a	12. c	13. c	14.b	15. a	16. a	17. c	18. d	19. c	20. c
21. d	22. d	23. d	24. b	25. d	26. c	27. c	28. d	29. a	30. d
31. d	32. a	33. a	34. b	35. c	36. c	37. b	38. a	39. b	40. d
41. d	42. a	43. a	44. b	45. a	46. d	47. d	48. b	49. c	50. c
51. c	52. d	53. c	54. c	55. b	56. b	57. a	58. a	59. b	60. b
61. b	62. c	63. b	64. a	65. c	66. b	67. b	68. b	69. a	70. c
71. c	72. b	73. a	74. d	75. a	76. c	77. d	78. c	79. b	80. a
81. d	82. a	83. d	84. d	85. d	86. d	87. d	88. d	89. a	90. a
91. d	92. a	93. d	94. d	95. d	96. b	97. d	98. c	99. a	100. b
101. d	102. c	103. b	104. b	105. a	106. b	107. b	108. d	109. a	110. a
111. c	112. d	113. b	114. a	115. d	116. c	117. d	118. c	119. c	120. a
121. d	122. d	123. d	124. c	125. a	126. a	127. d	128. b	129. b	130. a
131. b	132. a	133. c	134. b	135. c	136. c	137. a	138. c	139. b	140. c
141. c	142. b	143. c	144. c	145. d	146. a	147. b	148. a	149. d	150. c
151. c	152. c	153. c	154. b	155. c	156. b	157. b	158. b	159. c	160. a

Tamilnadu State Public Service Commission VAS exam - 2020

1. Which of the following facts are true regarding operation flood programme launched in India

1. NDDB formulated OF-1 programme in 1985
2. Of project is based on milk producer's co-operative societies throught out India
3. Supply of milk to urban consumers at stable price

a. 1 alone correct
b. 1 and 2 are correct
c. 3 alone is correct
d. 2 and 3 are correct

2. Which of the following statement is not true

1. Operation flood to sought to replicate the AMUL model of dairy development all over India.
2. AMUL model is based on Anand pattern co-operative structure
3. Anand pattern dairy co-operative formulate and implement their own policies and regulations for dairy development in their area
4. The role of government is limited to assist the co-operative financially is implementing their own programme

a. 1 and 3 b. 2 and 4
c. 4 only d. All of the above

3. As per the 19th livestock census, the total livestock population in Tamil Nadu is

a. 117.13 lakh b. 227.23 lakh
c. 337.13 lakh d. 367.23 lakh

4. In India per capita availability of milk during 2017-18

a. 320 gms/ day
b. 374 gms/ day
c. 380 gms/ day
d. 385 gms/ day

5. Twining rate is ..... in Goat farming

a. 20% b. 30%
c. 40% d. 50%

6. Which one of the following indigenous cattle breed is known as "Wadhiar"

a. Ongole b. Kankrej
c. Krishna Valley d. Kangeyam

7. ..... possesses two white collars, one round the jaw and the other round the brisket

a. Murrah b. Surti
c. Mehsana d. Bhadawari

8. Match the following

Poultry species	Zoological name
a. Duck	1. Pavo cristatus
b. Turkey	2. Anas platyrhynchos
c. Goose	3. Anser anser
d. Pea fowl	4. Meleagris galloparo

a. 2-a, 4-b, 1-c, 3-d
b. 2-a, 4-b, 3-c, 1-d
c. 4-a, 2-b, 3-c, 1-d
d. 2-a, 3-b, 4-c, 1-d

9. In dairy cow, milking operations should be completed within

a. 2-3 minutes
b. 10-15 minutes
c. 15-20 minutes
d. 5-7 minutes

10. Ear notching is commonly practiced for identification method in

a. Horse b. Camel
c. Poultry d. Swine

11. The pigment responsible for the brown eggshell in chicken

a. Crustacyanin
b. Tetrapyrroles
c. Oocyan
d. Ooporphyrin

12. The ideal age for dehorning the calf is

a. Before 7 days old
b. Before 10 days old
c. Before 15 days old
d. Before 12 days old

13. Which of the following device(s) that could be used to prevent abnormal behaviors

1. Muzzle 2. Gag 3. Drencher

a. 1 alone is correct
b. 2 alone is correct
c. 1 and 2 are correct
d. 1 and 3 are correct

14. The parturient paresis in cattle is caused by the deficiency of..... Nutrient

a. Sodium
b. Magnesium
c. Sulphur
d. Calcium

15. Feeding of bypass protein is advisable to

a. Dairy cow yielding more than 15 kg. milk/day
b. Dairy cow yielding less than 15 kg. milk/day
c. Pregnant cow
d. Dry cows

16. Feed dry matter intake of adult elephant ranges from

a. 2-3% of body weight
b. 1-1.5% of body weight
c. 4-5% of body weight
d. 3-4% of body weight

17. Which one of the following unconventional feed can be very well ensiled for ruminant feeding

a. Mango seed kernel
b. Sugarcane tops
c. Tapioca thippi
d. Tamarind assed powder

18. The pH value of good silage is

a. 3.7-4.2
b. 4.5-4.8
c. 2.0-2.5
d. 5.5-6.0

19. Grass tetany in cattle is due to the deficiency of

a. Magnesium
b. Manganese
c. Calcium
d. Copper

20. Which one of the following has high phosphorus content

a. Wheat bran
b. Ground nut oil cake
c. Maize
d. Soyabean meal

21. The crude protein equivalent of urea is

a. 150%
b. 300%
c. 281%
d. 181%

22. Which of the following is essential amino acid for cats

a. Taurine
b. Tryptophan
c. Tyrosine
d. Methionine

23. Glucogenic volatile fatty acid is

a. Propionic acid
b. Acetic acid
c. Iso-valeric acid
d. Butyric acid

24. Which of the following is precursor for prostaglandin and thromboxane?

a. Eicosapentaenoic acid
b. Hydroxy eicosatrienoic acid
c. Docosahexaenoic acid
d. Dihomo-y-linoleic acid

25..... is the direct measure of proportion of crude protein that can be used by animal for synthesis of body tissue

a. Biological value
b. Gross protein value
c. Net protein retention
d. Nitrogen balance

26. Who postulated the theory of chromosomal basis of likage

a. Gregor Mendal
b. Morgan
c. Muller
d. Griffith

27. The exchange of chromosome segments or portion between non-homologus chromosomes is known as

a. Translocation
b. Translation
c. Transfection
d. Recombination

28. The mechanism that equalizes the level expression of gene on the X-Chromosome between the two sexes even though males and females have different number of X-chromosomes is

a. Inactivation of X chromosome
b. Hyperactivation of X chromosome
c. Dosage compensation
d. Epigenetic inheritance

29. Situation in which each member of a population has an equal opportunity of mating with any individual of the opposite sex

a. Preferential mating
b. Panmixia
c. Non-random mating
d. Compulsory mating

30. Which of the following method of heat loss can occur when an animal is kept standing in a room with temperature above 40°C, with very low humidity

a. Convection and radiation
b. Convection and evaporation
c. Evaporation and radiation
d. Radiation alone

31. The organ that receives the maximum amount of cardiac output is

a. Pancreas
b. Liver via splanchnic circulation
c. Spleen
d. Heart

32. The average life span of erythrocytes of chicken is ..... days

a. 8 to 15
b. 28 to 35
c. 48 to 55
d. 68 to 75

33. An abnormal type of hemoglobin "HbS" is observed in

a. Aplastic anemia
b. Megaloblastic anemia
c. Sickle cell anemia
d. Microcytic anemia

34. A condition of breathing in which the rate or the depth or both are increased is termed as

a. Polypnea b. Apnea
c. Hyperpnea d. Eupnea

35. The primary stimulant for glycogenolysis in the muscle is

a. Insulin b. Glucagon
c. Epinephrine d. Acetylcholine

36. The pelvic organs can be palpated through this passage

a. Rectum b. Colon
c. Anus d. Vagina

37. Stomach capacity will be rumen 80%, rectum 05%, omasum and abomasum at the age of

a. 6 months b. 8 months
c. 24 months d. 18 months

38. Oval prominence of the mucous membrane lining the uterus are called as

a. Cotyledons b. Placentomes
c. Caruncles d. Hippomanes

39. Ventral diverticulam of Eustachian tube in equines is

a. Guttural pouch
b. Pharyngeal diverticulum
c. Isthmus faucium
d. Auditus laryngis

40. Nails swallowed by cattle, commonly lodged in this compartment and perforates diaphragm

a. Rumen b. Reticulum
c. Omasum d. Abomasum

41. Alimentary canal consist of all except

a. Esophagus b. Stomach
c. Liver d. Intestine

42. Among the babesia species, which one is more pathogenic and causing huge mortality in animals at field level is

a. Babesia bovis b. Babesia bigemina
c. Babesia divergens d. Babesia microti

43. The microscope which is routinely used in microbiology labs to examine both stained and unstained specimens

a. Dark field microscope
b. Bright field microscope
c. Phase contrast microscope
d. DIC microscope

44. Which one of the following is considered as non-obligatory cyclozoonosis

a. Taeniosis
b. Hydatidosis
c. Trichinellosis
d. Cutaneous larva migrans

45. A decision support system for the control of disease that require national control or eradication procedures

a. EpiMAN
b. EpiInfo
c. Epizoo
d. Win Episcope

46. Animals that shed infectious agent when they are recovering from a disease and the agent may then persist for prolonged periods

a. Incubatory carries
b. Lateral carriers
c. Convalescent carriers
d. Persistent carriers

47. The constant presence with usual frequency of occurrence of disease in a population

a. Sporadic
b. Endemic
c. Epidemic
d. Pandemic

48. Blue comb disease in turkey is caused by

a. Adenovirus
b. Corona virus
c. Picorna virus
d. Herpes virus

49. Which virus causes blue tongue in sheep

a. Orbi virus
b. Circo virus
c. Calci virus
d. Corona virus

50. Mareks disease in chicken is caused by

a. Herpes virus
b. Pox virus
c. Parapox virus
d. IB virus

51. Duck viral hepatitis is caused by

a. Herpes virus
b. Pox virus
c. Parapox virus
d. Picorna virus

52. Number of serotypes present in FMD virus

a. 10
b. 7
c. 8
d. 6

53. Brucellosis is caused by

a. Brucella abortus
b. Bacillus anthracis
c. Mycobacterium bovis
d. Leptospira interrogans

54. Leptospira spirochetes are more prevalent in

a. Marshy and Aluvial Soil
b. Rock Soil
c. Red soil
d. Black soil

55. Diagnosis of coccidiosis in chicken is best accomplished by

a. Clinical signs
b. Post mortem examination
c. Oocyte count
d. Demonstration of oocyt in droppings

56. Eosinophilic enteritis in human is caused by the dog parasite Ancylostoma caninum, which of the following statements are correct

a. It is caused by adult A. caninum
b. It is caused by infective larva (L3) of A. caninum
c. It can be diagnosed by examination of faeces of human patient
d. It causes an increase in the levels of circulating eosinophils

a. a and b
b. b,c and d
c. a, c and d
d. a and d

57. Severe infestation of this flea can lead to control ulceration and blindness

a. Echidnophaga gallinacea
b. Ctenocephalides canis
c. Xenopsylla cheopsis
d. Pulex irritans

58. In the following parasitic diseases, hypoglycemia is observed in

a. Theileriasis
b. Babesiosis
c. Typanosomiasis
d. Leishmaniasis

59. Bradyzoitic characteristic of chronic Toxoplasma infection are seen in

a. Blood b. Brain
c. Faeces d. Lymph

60. Immune eversion in trypanosome infection is due to

a. Antigenic memory
b. Immuno suppression
c. Repeated changes in antigenic character
d. Inhibition of phagolysome formation

61. The most pathogenic cestode of poultry is

a. Raillietina echinobothridia
b. Davainea proglottina
c. Choanotaenia infundibulum
d. Cotungnia diagonopora

62. Temporary relationship between two organisms, where in one organism transports another is known as

a. Symbiosis
b. Mutualism
c. Phoresy
d. Commensalism

63. Death of the animal is assessed by

1. Stoppage of respiration
2. Loss of corneal reflex
3. Cooling of the body
4. Pedalling movements of legs

a. is true and (2), (3) & (4) are false
b. is true and (1), (3) & (4) is false
c. (1), (2) and (3) are true & (4) is false
d. is true and (1), (2) & (3) are false

64. Ruptured immature neutrophils in circulation are called as

a. Basket cells b. Smudge cells
c. Target cells d. Crenated cells

65. In which of the following disease, the upper respiratory tract is usually the primary nidus of infection in rabbits

a. Coronaviral enteritis
b. Pasteurellosis
c. Listeriosis
d. Dermatophytosis

66. Histological features of interstitial pneumonia are given below, which of the following feature is/are unrelated to the condition

1. Thickening of inter lobular septa due to fibrosis tissue proliferation
2. Epitheliolisation or fetalisation is prominent
3. Giant cell and hyaline membrane formation is seen
4. Hyperplasic alveolar epithelium gives it a glandular appearance

a. 2 & 3 are unrelated
b. 3 alone is unrelated
c. 4 alone is unrelated
d. 1,3 & 4 are unrelated

67. Cooling of the body

a. Rigor mortis b. Algor mortis
c. Hypothermia d. Liver morits

68. Langhan's giant cells are seen in

a. Burkitt Lymphomoa
b. Pseudo rabies
c. Hodgkin's disease
d. Tuberculosis

69. Diffuse spreading suppurative inflammation of connective tissue is known as

a. Phlegmon b. Abscess
c. Pustule d. Sinus

70. The drug effective in anaerobic infection is

a. Azithromycin
b. Ciprofloxacin
c. Gentamicin
d. Metronidazole

71. Cefotaxime which is highly effective in Staphylococci infection is classified as

a. First generation cephalosporin
b. Second generation cephalosporin
c. Third generation cephalosporin
d. Fourth generation cephalosporin

72. An agent used against anaerobic bacteria as well as protozoa is

a. Mebendazole b. Metronidazole
c. Methicillin d. Marbofloxacin

73. The methicilin Resistant Staphylococci (MRS) is resistant to B lactam antibiotics through

a. Penicillin Binding Protein Mutation (RBP1a)
b. PBP1b
c. PBP2a
d. PBP3

74. Antibacterial agent used for topical application is

a. Amikacin
b. Cefepime
c. Tazobactum
d. Polymyxin-B

75. Drugs concentrate more in milk if they are

a. Weakly acidic
b. Weakly basic
c. Strongly acidic
d. Strongly basic

76. Pick up the correct sequence with regard to the descending order of first pass effect of a drug with reference to route of administration of drugs

a. Intra venous, sublingual, intra muscular, rectal, oral
b. Oral, rectal, intra muscular, sublingual, Intra venous
c. Intra venous, sublingual, rectal, intra muscular, oral
d. Oral, intra muscular, rectal, Intra venous, sublingual

77. The following are purgatives EXCEPT

a. Docusate sodium
b. Castor oil
c. Bisacodyl
d. Loperamide

78. Assertion (A): Loop diuretics are used along with potassium sparing diuretics

Reason (R): Loop diuretics cause hypokalemia

a. (A) is true and (R) is the correct reason for (A)
b. (A) is true and (R) is not the correct reason for (A)
c. (A) is false but (R) is true
d. (A) and (R) are false

79. Collection of blood between the ear cartilage and skin of the dog is

a. Otitis externa
b. Otitis media
c. Otitis interna
d. Aural haematoma

80. The sperm concentration of adult bull ranges from

a. 1.8×10^9 sperm/mL
b. 1.0×10^7 sperm/mL
c. 8.0×10^5 sperm/mL
d. 6.0×10^7 sperm/mL

81. Which of the following facts are correct regarding signs of fetal acidosis in resuscitation of calf

(1) Low heart rate
(2) Prolonged jugular refilling time
(3) Corneal opacity
(4) Poor muscle tone

a. (1) is true (2), (3), (4) false
b. All are true statement
c. (1), (2), (4) true, (3) false
d. (1),(2), (3),(4) statements are false

82. Administering GnRH on 11-days after breeding, to improve conception rate in cows induces

a. Accessory corpus luteum formation
b. Clearing the uterine environment
c. Proliferation of endometrial glands
d. Inducing persistence of dominant follicle

83. The intersexual characteristic of a male pesudohermaphrodites

a. Phenotypically resemble males but have ovaries
b. Phenotypically resemble females but have testes
c. Have both testes and ovaries
d. Does not have both testes and ovaries

84. Goose stepping gait in pigs is due to the deficiency of

a. Niacin
b. Folic acid
c. Pantothenic acid
d. Pyridoxine

85. The state of dehydration is assessed by inspecting

a. Eye and skin
b. Tail and skin
c. Mucous membrane
d. Heart area and skin

86. Which of the following deficiency occurs most commonly in animals grazing during drought seasons and houses and fed on hay only?

a. Phosphorus deficiency
b. Biotin deficiency
c. Chloride deficiency
d. Potassium deficiency

87. Which one of the following puppy having low immunity against Parvo viral enteritis leading to high risk

a. Pug b. Chippi parai
c. Dobermann d. Rajapalayam

88. Commonly used dairy sanitizer is

a. Calcium hypochloride
b. Quaternary ammonium compound
c. Iodine compound
d. Choramine

89. After pasteurization milk should be stored below ..... to retard the growth of surviving organism

a. 10°C b. 0°C
c. 5°C d. 15°C

90. The pH of normal milk usually varies from

a. 5.4 to 5.6 b. 7.4 to 7.6
c. 6.7 to 6.8 d. 6.4 to 6.6

91. The stabilizer used in ice-cream preparation is .....

a. Gelatin b. Starch
c. Egg yolk d. GMS

92. In general the light intensity at all inspection points of slaughter house/meat inspection room should not be less than

a. 110 lux b. 540 lux
c. 220 lux d. 320 lux

93. Overall result of stress to livestock before slaughter results in

a. Increased in blood urea
b. Increase in the level of blood glucose and ketones
c. Decrease in blood urea
d. Increase in blood cholesterol

94. The ultimate pH of meat is

a. 4.5 b. 5.5
c. 6.5 d. 6.0

95. Gelatin is prepared from

a. Intestines
b. Skin and hide trimmings
c. Bone meal
d. Horns and hooves

96. During animal waste processing high risk material must be heated to a core temperature of

a. 133°C b. 90°C
c. 210°C d. 100°C

97. The average BOD values of efficient from poultry meat processing plant ranges between

a. 1000-1200 b. 600-1300
c. 5000 d. 20000

98. The dip lift method of stunning is related to

a. Electrical stunning
b. Gaseous stunning
c. Mechanical stunning
d. None of the above

99. During stunning, the arterial blood pressure of animals raises to

a. 120 -145 mm Hg
b. 260 mm Hg
c. 450 mm Hg
d. 90 mm Hg

100. Maiming of an animal is made by all except

a. Fracture of bone
b. Cutting of tendons of legs
c. Injury to udder
d. Over loading

101. Any establishment involving on experimentation on animals should be registered with

a. AWBI b. SPCA
c. CPCSEA d. PETA

102. The prevention of cruelty to draught and pack animals rules were enforced in

a. 1955 b. 1965
c. 1975 d. 1985

103. Demand changes with the changes in following except

a. Taste of preference b. Income
c. Price d. Tax

104. Insurance premium is @ ..... of animal cost

a. 5% b. 10 %
c. 15% d. 20 %

105. Fixed Capital to work out economics of dairy enterprises of

a. Building cost
b. Dairy cattle cost
c. Equipment cost
d. All of these

106. The native breed of cattle in southern districts of Tamil Nadu

a. Kangeyam
b. Umbalacheri
c. Alambadi
d. Pulikulam

107. Which is the rural development programme according to technological dissemination system?

a. Artificial Insemination Programme
b. Hill Area Development Programme
c. Khadi and Village Industries
d. Krishi Vigyan Kendra (KVK)

108. National Diary Research Institute (NDRI) located in

a. Mumbai b. Karnal
c. Izatnagar d. Chennai

109. Choose the correct statement regarding livestock development programme of India

1. Key Village Scheme was launched in 1952 for the development of cattle and buffaloes
2. Central Gaushala Development Board was setup in 1989
3. Central Frozen Semen Production and Training Institute at Hessarghatta in 1963

a. 1 alone correct b. 2 alone correct
c. 1 and 3 are correct d. 3 alone correct

110. The estimated egg production during 2017-has increased to ..... in Tamilnadu

a. 1,64,161 lakh numbers
b. 1,77,160 lakh numbers
c. 1,74,161 lakh numbers
d. 1,87,160 lakh numbers

111. Which breed of cattle is famous for Jallikattu in Southern Parts of Tamil Nadu?

a. Pulikulam b. Kangayam
c. Bargur d. Umblachery

112. Umblachery breed is considered to be developed by crossing..... with local animals of Thanjavur

a. Alambadi b. Kangayam
c. Pulikulam d. Bargur

113. Which of the following breed (s) of sheep are polled in nature

1. Mandya 2. Vembur 3. Mecheri

a. 1 alone is correct
b. 1 and 2 are correct
c. 3 alone is correct
d. 2 alone is correct

114. Which of the following statements are correct related to Pashima

1. It is a finer specialty fiber
2. Production from goats
3. Himalaya like high altitude area
4. High quality shawls and fabric

a. 1 and 2 b. 2 and 3
c. 1,3 and 4 d. 1,2,3 and 4

115. The order of disappearance of pigments (bleaching) form poultry body is

a. Vent-Eye ring-Ear lobes-Beak-Shank
b. Vent-Beak-Eye ring-Ear lobes-Shank
c. Shank-Beak-Ear lobes-Eye ring-Vent
d. Vent-Shank-Beak-Ear lobes-Ear ring

116. Floor space requirement recommended under covered area for farrowing sow is .....m^2

a. 7.0-9.0 b. 10.0-11.0
c. 12.0-13.0 d. 1.8-2.7

117. Floor space requirement of adult buffalo in covered area is

a. 3.5 m^2 b. 4.0 m^2
c. 12.0 m^2 d. 1.0 m^2

118. What will be the floor space requirement like covered area per animal (mand open area per animal (mfor cows?

a. 4.5 and 8.0 b. 3.5 and 7.0
c. 6.0 to 9.0 d. 5.5 and 9.0

119..... are surgically unsexed male chickens

a. Toms b. Capons
c. Fryers d. Roasters

120. Which one of the following method is widely used for disposal of farm animal wastes?

a. Rendering b. Burial
c. Composting d. Incineration

121. High intake of maize in the diet of pigs and poultry leads to ..... deficiency

a. Thiamin b. Nicotinamide
c. Riboflavin d. Pyridoxine

122. Perosis in chicks is caused by the deficiency of

a. Calcium b. Phosphorus
c. Manganese d. Magnesium

123..... feeding starts 2 weeks before the expected date of calving

a. Steaming up b. Flushing
c. Challenge d. Complete

124. The inclusion level of molasses in the animal ration is

a. 5-10% b. 1-2%
c. 40-50% d. 20-30%

125. Rapeseed contain which of the following fatty acid

a. Erucic acid b. Oleic acid
c. Linolenic acid d. Stearic acid

126. Match List I (Feed ingredients) with List II (Anti-nutritional factor) and select the correct answer

List I	List II
a. Soyabean	1.Ricin
b. Caster bean	2.Saponin
c. Salseed meal	3.Proteas -inhibitor
d. Lucerne	4.Tannin

(a) (b) (c) (d)

a. 2 3 1 4 b. 1 4 3 2
c. 4 2 1 3 d. 3 1 4 2

127. Part of feed dry matter which consists mostly of sugars and starches is referred as

a. Ether extract
b. Crude fibre
c. Nitrogen free extracts
d. Crude protein

128. As per breeding policy of Tamilnadu use of Holstein-Friesian (HF) bull semen is recommended for grading up of non-descript cattle in the areas like

a. Coimbatore, Udumalpet, Pollachi and Dharmapuri
b. Nilgiris, Kodaikanal and Kanyakumari district
c. Thanjavur, Tirunelveli and Nagai districts
d. Madurai, Tirunelveli and Virudhunagar districts

129. The procedure of treating some genetic disorders by delivering a normal copy of the defective gene to the individual is called

a. Nuclear Transfer (NT)
b. Gene Transfer
c. Gene Therapy
d. Gene knock-out

130. In poultry breeding studies, it is found that egg weight and egg production traits are

a. Positively correlated
b. Negatively correlated
c. Not at all correlated
d. Environmentally correlated

131. REML stands for

a. Random Error Maximum Likelihood Method
b. Restricted Maximum Likelihood Method
c. Relative Environment Maximum Likelihood Method
d. Restricted Minimum Likelihood Method

132. The age at sexual maturity in Tiger is between

a. 1 to 2 years b. 2 to 3 years
c. 3 to 4 years d. 4 to 5 years

133. Which indigenous breed of cattle produce more milk yield per lactation

a. Gir b. Red Sindhi
c. Sahiwal d. Tharparker

134. In rumen, methane is produced by the action of

a. Bacteriodes succinogens
b. Ruminococcus albus
c. Methanobacterium ruminantum
d. Butyrivibro fibrisolvens

135. Which one of the following is termed as internal baroreceptors?

a. JG cells b. Macula densa
c. Vasa recta d. Lacis cells

136. Match of the following digestive enzymes with its physiological function

Enzymes	Function
a. Pepsin	1. Activate the trypsinogen
b. Enteroninase	2. Splits fats to free fatty acids
c. Pancreatic lipase	3. Conversion of proteins into polypeptides
d. Rennin	4. Milk coagulating enzymes

	(a)	(b)	(c)	(d)
a.	2	1	4	3
b.	1	3	2	4
c.	4	1	2	3
d.	3	1	2	4

137. The immunoglobulins are absorbed intact in newborn animals due to all of the following except

a. Presence of antitrypsin factor in colostrum
b. Absorption occurs by pinocytic mechanism
c. Gastric acid is not secreted
d. Absorption occurs via special ruminal papillae

138. Calcium channel blocker

a. Captopril b. Losartan
c. Labetalol d. Verapamil

139. The oxidative phase of HMP shunt generates which of the following reducing equivalent

a. NADH b. NADPH
c. FADH2 d. NAD^+

140. The pulmonary veins open into

a. Left ventricle b. Right ventricle
c. Left atrium d. Right atrium

141. The number of thoracic vertebrae in OX

a. 9 b. 12
c. 13 d. 18

142. In domestic fowl, the clavicles of two sides unites to form a plate called

a. Hypocleidium b. Keel
c. Pectoral girdle d. Pelvic girdle

143. Point of hock joint is formed by

a. Tibial tarsal
b. Fibular tarsal
c. Fused central and fourth tarsal
d. Fused second and third tarsal

144. The action of the deltoideus muscle is

a. To flex the shoulder joint and adduct the arm
b. To abduct the arm and rotate it outwards
c. To extent the shoulder joint
d. To flex the shoulder joint and abduct the arm

145. The drug of choice and dose rate for treating H. canis infection in dog is

a. Trimethoprion- 15mg/kg bwt for 6 days
b. Pyrimethamine 0.25 mg/kg bwt for 2 days
c. Clindamycin 10 mg/kg bwt for 4 days
d. Imidocarb dipropionate 5mg/kg bwt for 4 days

146. Which one is the correct and safe protected titer value for rabies

a. <0.25 b. <0.35
c. <0.45 d. >0.5

147. An example for primary lymphoid organ

a. Tonsils b. Spleen
c. Lymph node d. Thymus

148. Ability of an infectious agent to cause disease, in a particular host, in terms of severity

a. Virulence
b. Pathogenicity
c. Infectivity
d. Invasiveness

149. Which immunoglobulin mediates Type I hypersensitivity reaction

a. IgE b. IgM
c. IgD d. IgA

150. Germ tube test is carried out for the identification of

a. Candida albicans
b. Clostridium tetani
c. E. coli
d. Staphylococcus aureas

151. In the absence of bright sunlight and certain atmospheric pollutants, the foot and FMD virus can be carried by air stream for at least..... mile distance to infect incontact health susceptible animals.

a. 20 mile distance
b. 30 mile distance
c. 40 mile distance
d. 10 mile distance

152. Which of the following is the order in which the lesions of pox virus infections developed

a. Papular-Pustular-Roseolar-Scab formation-Vesicles
b. Roseolar-Papular-Vesicular-Pustular-Scab formation
c. Vesicles-Pustular-Papules-Rashes-Scabs
d. Scabs-Vesicles-Pustules-Papular-Rashes

153. Johne's disease infection is acquired by calves at an early stage through

a. Ingestion of organism
b. Inhalation
c. By seeing the disease animal
d. Skin contact

154. Pink eye in bovine is caused by

a. Moraxella bovis
b. Psuedomonas aeroginosa
c. Aphtho virus
d. Lyssa virus

155. Organism that live on dead or decaying organic matter is called

a. Symbiosis b. Saprophytism
c. Parasitism d. Commensalism

156. The most commonly used media to grow fungi

a. Nutrient agar
b. Sabouraud dextrose agar
c. Muller hinton agar
d. Macconkey agar

157. Micro organism that grow in moderate temperatures are called

a. Mesophiles
b. Thermophiles
c. Psychrophiles
d. Hyper thermophiles

158. Lithium antimony thiomaleate is a drug of choice for

a. Acute fasciolosis b. Nasal Schistosomosis
c. Amphistomosis d. Toxocariosis in cattle

159. During necropsy, hepatic coccidiosis is easily diagnosed by the examination of

a. Faeces for oocysts
b. Liver for asexual stages
c. Bile for oocysts
d. Liver for macrogamonts

160. Slime balls expelled by snails contain what larval stage of Dicrocoelium dentriticum

a. Redia b. Sporocysts
c. Metacercaria d. Cercaria

161. Which of the following parasite is transmitted by swallowing/ ingestation of intermediate host/vector

a. Babesia gibsoni
b. Hepatozoon canis
c. Dipylidium caninum
d. Both (b) and (c)

162. Which of the following statement is incorrect

a. Schistosoma nasale egg is Boomerang shaped
b. Strongyloides spp eggs are thin shelled with segmented yolk
c. Taenia spp eggs are cart-wheel appearance
d. Trichuris spp eggs are brown and barrel shaped

163. Most suitable type of soil foe development of Ancylostoma Caninum larvae is

a. Sandy moist soil b. Gravel
c. Clay d. Loamy

164. The distinctive morphological features of Psoroptes mites are

a. Funnel-shaped sucker, Three-jointed pedicel, pointed mouth parts, rounded abdominal tubercle
b. Cup-shaped sucker, short jointed pedicel, rounded mouth parts, truncate abdominal tubercles
c. Cup-shaped sucker, three jointed pedicel, pointed mouth parts, rounded abdominal tubercle
d. Funnel-shaped sucker, short jointed pedicel, rounded mouth parts, truncate abdominal tubercles

165. Assertion (A): Death of an animal due to black quarter and malignant oedema is caused by toxemia.

Reason (R): In black quarter and malignant oedema there is ingestion of food contaminated with toxins

a. Both (A) and (R) are true and (R) is the correct explanation of (A)
b. Both (A) and (R) are true and (R) is not a correct explanation of (A)
c. (A) is true but (R) is false
d. (A) is false but (R) is true

166. Match the following

a. Swine erysipelas	1. Diamond skin disease
b. Listeriosis	2. Abscess in sub-maxillary lymph node
c. Strangles	3. Wooden tongue
d. Actinobacillosis	4. Circling disease

	(a)	(b)	(c)	(d)
a.	1	2	3	4
b.	1	3	2	4
c.	2	4	3	1
d.	1	4	2	3

167. Marbling of the lung is a characteristic feature is seen in

a. Anaplasmosis
b. Contagious bovine pleuropneumonia
c. Leptospirosis
d. Vibriosis

168. In which disease the rectum shows "Zebra marking" or "Tiger Striping" appearance

a. Rinderpest
b. FMD
c. Bovine viral diarrhea
d. Malignant catarrhal fever

169. One of the following organic compounds is not an alkaloid

a. Atropine b. Quinine
c. Digoxin d. Arecoline

170. Which one of the following aflatoxin is the most toxic in nature

a. G1 b. M1
c. B1 d. B2

171. Neurotoxic snake venom is produced by

a. Cobra b. Krait c. Vipers d. Rattle snakes

a. a & b b. b & c
c. c & d d. a & c

172. Methylene blue is the treatment of choice for

a. Lead poisoning
b. Nitrite poisoning
c. Arsenic poisoning
d. Cadmium poisoning

173. Blind stagger is associated with the following toxicity condition

a. Chronic Arsenic toxicity
b. Sub-acute selenium toxicity
c. Acute lead toxicity
d. Molybdenum toxicity

174. Consider the following pair

Drug	Clinical use
1. Phenytoin	Anticonvulsant
2. Ondansetron	Antiemetic
3. Liquid Paraffin	Laxative
4. Ketamine	Dissociative anaesthetic

Which of the above pair is/are correctly matched?

a. 1 only
b. 1 and 2 only
c. 1 and 3 only
d. 1, 2, 3 and 4

175. In stage III surgical anaesthesia, which plane ends with cessation of eyeball movement?

a. Plane 1
b. Plane 2
c. Plane 3
d. Plane 4

176. Which one of the drug is used in local anaesthetic procedure in veterinary practices?

a. Ketamine
b. Propofol
c. Thiopentan
d. 2% Lignocaine

177. Fenbendazole is a more potent anthelmintic than thiabendazole because

a. Fenbendazole is slowly absorbed in G1 tract because of low solubility in water
b. Thiabendazole are dissolved well and dissociative quickly in G1 tract
c. Difference in Pharmacokinetic behaviour
d. G1 tracts acts as lipid barrier

178. Wounds produced by friction is called

a. Abrasion b. Contusion
c. Bruise d. Laceration

179. Ranula is a

a. Exudation cyst b. Retention cyst
c. Dentigerous cyst d. Dermoid cyst

180. The phase of excretory urography during which contract medium opacifies the renal collecting system

a. Cholecystogram b. Myelogram
c. Pyelogram d. Gastrogram

181. The nerve block given for motor paralysis of eyelid is

a. Mental nerve block
b. Retrobulbar nerve block
c. Auriculopalpebral nerve block
d. Infratrachlear nerve block

182. An abscess involving the sebaceous gland is

a. Carbuncle b. Impetigo
c. Acne d. Furunculosis

183. A closed wound which is produced by blunt objects results in damage to subcutaneous tissues without break in continuity of the skin surface is

a. Bruise b. Contusion
c. Haematoma d. Seroma

184. At..... after death the fetal corneas are cloudy and grey

a. 24 hrs b. 12 hrs
c. 36 hrs d. 48 hrs

185. Fructose in a source of energy for spermatozoa in the semen of domestic animals except

a. Bull b. Dog
c. Ram d. Boar

186. Which of the following hormones have primarily luteinizing hormone (LH) like activity

a. Pregnant mare serum gonadotrophin (PMSG)
b. Human menopausal gonadotrophin (hMG)
c. Human chorionic gonadotrophin (hCG)
d. Follicular stimulating hormone (FSH)

187. Butterfly cast is used in the treatment of

a. Hip displasia
b. Shoulder dislocation
c. Hip dislocation
d. Elbow dislocation

188. Uncommon sequelae of traumatic perforation of the reticular wall in cattle is

a. Acute local peritonitis
b. Rupture of left gastroepiploic artery
c. Perforation of pericardium
d. Recovery

189. Hypokalemia in cattle leads to

a. Myotonia b. Tetany
c. Opacity of the cornea d. Epistaxis

190. The Polenske (P) value of ghee is normally not more than

a. 2 b. 4
c. 3 d. 5

191. Lactose content in cow milk is about .....

a. 1-2% b. 4-5%
c. 10-15% d. 16%

192. Salting in cheese is done at a level of ..... %

a. 1-2 b. 3-4
c. 5-6 d. 7-8

193. Which is the richest source of milk fat of the following dairy products

a. Curd b. Ice-cream
c. Ghee d. Khoa

194. Frankfuter is a typical example of .....

a. Uncooked sausage
b. Cooked unsmoked sausage
c. Cooked smoked sausage
d. Uncooked smoked sausage

195. Which one of the following is not a traditional meat product

a. Kabab b. Sausages
c. Tikka d. Kofta

196. Strength of cartridge in captive bolt pistol is measured in grains. One grain equals to

a. 500 mg b. 0.2 grams
c. 0.065 grams d. 1.5 grams

197. The judgement for "Fevered carcasses" is

a. Partial rejection
b. Total rejection
c. Suspect
d. Conditionally approve

198. Haemal Lymphnodes are found in

a. Sheep b. Pig
c. Horse d. All of these

199. Place where animals are given rest before slaughter is called as

a. Abattoir
b. Slaughterhouse
c. Market
d. Lairage

200. Match List I correctly with List II and select your select your answers using the codes given below

List I	List II
a. Fisher & Hooker theory	1. Heat stability of milk
b. Stocke's law	2. Condensed milk
c. Sommer and hearts theory	3. Cream
d. Forced crystallization	4. Butter

	(a)	(b)	(c)	(d)
a.	3	4	1	2
b.	4	3	2	1
c.	4	3	1	2
d.	1	3	4	2

Answer Sheet

1. d	2. c	3. b	4. b	5. c	6. b	7. b	8. b	9. d	10. d
11. d	12. b	13. a	14. d	15. a	16. b	17. b	18. a	19. a	20. a
21. c	22. a	23. a	24. a	25. a	26. b	27. a	28. c	29. b	30. c
31. b	32. b	33. c	34. c	35. c	36. a	37. d	38. c	39. a	40. b
41. c	42. a	43. b	44. b	45. a	46. c	47. b	48. b	49. a	50. a
51. d	52. b	53. a	54. a	55. b	56. d	57. a	58. c	59. b	60. c
61. b	62. c	63. c	64. a	65. b	66. c	67. b	68. d	69. a	70. d
71. c	72. b	73. c	74. d	75. b	76. b	77. d	78. a	79. d	80. a
81. a	82. a	83. b	84. c	85. a	86. a	87. c	88. a	89. c	90. d
91. a	92. b	93. b	94. b	95. b	96. a	97. a	98. b	99. b	100. d
101. c	102. b	103. d	104. a	105. d	106. d	107. d	108. b	109. c	110. c
111. a	112. b	113. c	114. d	115. a	116. a	117. b	118. b	119. b	120. c
121. b	122. c	123. c	124. a	125. a	126. d	127. c	128. b	129. c	130. b
131. b	132. c	133. c	134. c	135. a	136. d	137. d	138. d	139. b	140. c
141. c	142. a	143. b	144. d	145. d	146. d	147. d	148. a	149. a	150. a
151. c	152. b	153. a	154. a	155. b	156. b	157. a	158. b	159. c	160. d
161. d	162. b	163. a	164. a	165. c	166. d	167. b	168. a	169. c	170. c
171. a	172. b	173. b	174. d	175. a	176. d	177. a	178. a	179. b	180. c
181. c	182. c	183. b	184. b	185. b	186. c	187. c	188. b	189. a	190. a
191. b	192. a	193. c	194. c	195. b	196. c	197. b	198. b	199. d	200. c

ICAR-JRF Exam-Veterinary Science -2018

1. Major component of cow's blood is

a. Water
b. Electrolyte
c. Proteins
d. Haemoglobin

2. Spermatozoa are produced in

a. Germ cells
b. Sertoli cells
c. Leydig cells
d. Interstitial cells

3. Which of the following is not the character of a muscle?

a. Elasticity
b. Extensibility
c. Rigidity
d. Contractibility

4. Which of the following is involved in translation of protein?

a. RNA
b. tRNA
c. mRNA
d. sRNA

5. Egestion is the process which is unique to

a. Horse
b. Swine
c. Birds
d. Sheep

6. Muscarine action of acetyl choline include

a. Colic pin in abdomen and extensive salivation
b. Release of adrenaline from adrenal medulla
c. Tachycardia
d. Rise in intraocular pressure

7. Mycology is the branch of microbiology dealing with the study of

a. Mycobacterium
b. Mycoplasma
c. Mycotoxin
d. Fungus

8. Which of the following is not a feature of virus?

a. Capsomere
b. Capsid
c. Envelope
d. Capsule

9. Rose Bengal Plate Test (RBPT) is employed to diagnose Brucellosis in

a. Milk sample
b. Uterine discharge
c. Serum sample
d. Brucella colonies

10. X- ray film should be stored at

a. Hot and humid place
b. Cool and dry place
c. Cool and humid place
d. Hot and dry place

11. Following vaccination, which class of immunoglobulin appears first

a. IgG
b. IgD
c. IgM
d. IgD

12. The virus family having diploid genome is

a. Poxviridae
b. Retroviridae
c. Reoviridae
d. Adenoviridae

13. The third eyelid is fully developed in

a. Horse
b. Cattle
c. Poultry
d. Dog

14. Which one of the following is not a constituent of bacterial cell wall?

a. Techoic acid
b. Dipicolinic acid
c. Mycolic acid
d. Muramic acid

15. Transmission of disease from infected mother to its baby is known as

a. Horizontal transmission
b. Biological transmission
c. Mechanical transmission
d. Vertical transmission

16. Highly virulent avian influenza virus type is

a. H5N
b. H3N
c. H1N
d. H3N3

17. Rickets in poultry is caused due to the deficiency of

a. Vit A
b. Vit D
c. Vit E
d. Vit K

18. Microorganism can be preserved for longer time by

a. Tyndalization
b. Pasteurization
c. Lyophilization
d. Sensitization

19. Which of the following is not an intracellular parasite?

a. Plasmodium b. Babesia
c. Theileria d. Toxocara

20. The acaricide drugs usually kill

a. Ascaris b. Tapeworms
c. Ticks & Mites d. Round worms

21. Contrast radiography of tendon and associated structure is known as

a. Sialogaphy b. Fasciagraphy
c. Myelography d. Pyelography

22. The host harbouring adult sexually mature parasite is called as

a. Intermediate host b. Paratonic host
c. Definitive host d. Transport host

23. Which of the following is an acid fast bacteria?

a. Staphylococcus b. Mycobacterium
c. Mycoplasma d. Salmonella

24. The closed cavity filled with blood is known as

a. Cyst b. Haematoma
c. Abscess d. Sarcoma

25. Which of the following hormone is produced by corpus luteum

a. LH b. FSH
c. Progesterone d. Estrogen

26. If the semen is thick, creamy in consistency and there is cloudiness, it is rated as

a. Excellent b. Good
c. Fair d. Poor

27. The specific gravity of milk is not affected by

a. Fat b. Protein
c. Lactose d. Vitamins

28. Spread of a disease all over the world is known as

a. Sporadic b. Endemic
c. Epidemic d. Pandemic

29. Which of the following disease is not a zoonotic disease?

a. Anthrax
b. Tuberculosis
c. Tetanus
d. Brucellosis

30. The viruses can be visualized under

a. Electron microscope
b. Light microscope
c. Fluorescent microscope
d. Dark field microscope

31. Which one of the following animal is having maximum number of teats?

a. Cow b. Mare
c. Ewe d. Swine

32. Which of the following animal/ bird's disease has been eradicated from India?

a. Rinderpest b. FMD
c. Avian Influenza d. Fowl pox

33. Which of the following organism having either DNA or RNA but never both?

a. Bacteria b. Fungus
c. Virus d. Chlamydia

34. White muscle disease in calf is caused by deficiency of

a. Vit A b. Vit K
c. Vit D d. Vit E

35. Xeropthalamia occurs due to deficiency of

a. Riboflavin b. Vit A
c. Ascorbic acid d. Vit D

36. Eating of own species by an animal is called as

a. Caprophagia
b. Cannibalism
c. Osteophagia
d. Geophagia

37. The OS penis is found in

a. Dog b. Bull
c. Stallion d. Ram

38. The first antibiotic discovered by Alexander Flaming was

a. Tetracyclin b. Amoxycillin
c. Streptomycin d. Penicillin

39. Glenoid cavity is found in

a. Pelvic girdle b. Pectoral girdle
c. Sternum d. Skull

40. In poultry blood is usually collected from

a. Jugular vein b. Wing vein
c. Femoral vein d. Tail vein

41. According to size/diameter of the virus, the largest animal virus is

a. FMD virus b. Rabies virus
c. Influenza virus d. Pox virus

42. Which one of the animal having longest gestation period

a. Mare b. Cow
c. Buffalo d. Swine

43. Mallein test is employed for the diagnosis of

a. Glanders b. Strangles
c. Brucellosis d. Johne's disease

44. Criss cross sutures are mostly used in

a. Preputial proplase b. Vaginal prolapse
c. Phimosis d. Atresia ani

45. Chemical which is used more commonly for purification of water is

a. Copper sulphate
b. Alum
c. Iodine
d. Bleaching powder

46. Pneumatic bones are mostly present in

a. Birds b. Dog
c. Horses d. Swine

47. For the expulsion of mummified fetus, one of the following is used

a. Progesterone b. Oxytocin
c. FSH d. Estrogen

48. Sheep scab is caused by

a. Sarcoptes b. Notoedres
c. Psoroptes d. Chorioptes

49. Which cells are involved in the presentation of antigen to T-lymphocytes

a. Plasma cells b. Neutrophils
c. Erythrocytes d. Macrophages

50. Pampiniform plexus is

a. A branch of lumbosacral plexus
b. Plexus of arteries around spermatic vein
c. Plexus of veins around spermatic artery
d. Nerve supply to testis

51. Which of the following animal has largest uterine body

a. Cattle b. Mare
c. Sow d. Sheep

52. The sterilization of the surgical instrument is carried out by

a. Boling water b. Radiation
c. Autoclave d. Chemicals

53. Dry cow therapy is indicated for

a. Milk fever b. Mastitis
c. Ketosis d. Tetany

54. Infectious canine hepatitis virus belongs to family

a. Hepadnaviridae
b. Picornaviridae
c. Adenoviridae
d. Paramyxoviridae

55. The epithelial lining of the peritoneum is

a. Simple cuboidal
b. Simple squamous
c. Psuedostratified columnar
d. Simple columnar

56. The gait fault in which the foot is thrown outward in flight is called

a. Padding b. Winging
c. Plaiting d. Rope walking

57. Second intermediate host of *Dicrocoelium dendriticum* is

a. Ant b. Grasshopper
c. Beetle d. Naids

58. Fistulous wither in horse is associate with the following nematode parasite

a. Stephanofilaria
b. Parafilaria
c. Dirofilana
d. Onchocera cervicalis

59. Summer mastitis in cattle is caused by

a. Streptococcus uberis
b. Staphylococcus aureus
c. Mycoplasma bovis
d. Corynebacterium pyogenes

60. "Fried Egg" colonies appear in culture of

a. Mycobacteria b. Mycoplasma
c. Brucella d. Haemophilus

61. Parietal cells are found in

a. Stomach b. Liver
c. Pancreas d. Heart

62. Histologically tendon is composed of

a. Mucous connective tissue
b. Dense regular connective tissue
c. Loose irregular connective tissue
d. Dense irregular connective tissue

63. The organ which act as reservoir of blood and take part in destruction of erythrocytes is

a. Lymph node b. Spleen
c. Thyroid d. Stomach

64. Undulating fever, joint pain, foul sweating and night sweating are characteristic symptoms in patient suffering from

a. Brucellosis b. Leptospirosis
c. Trichonellosis d. Dermatophytosis

65. Acepromazine is classified as

a. An alpha-2 adrenergic agonist
b. A phenothiazine tranquilizer
c. An anticholinergic
d. An opioid agonist

66. The anterior displacement of a normal-sized globe within the orbit is known as

a. Exophthalmos b. Enopthalmos
c. Hydropthalmos d. Megalophthaloms

67. A Cole's fracture may occur in the

a. Tibia b. Radius
c. Ulna d. Humerus

68. Most susceptible breed of cow for milk fever is

a. Holstein b. Non-descriptive
c. Jersey d. Red Sindhi

69. Prolapse of uterus in cattle involves

a. Gravid horn only
b. Non- gravid only
c. Both gravid and non-gravid horns
d. Partly gravid horn and partly non-gravid horn

70. Semen can be preserved at room temperature in

a. Tris-egg yolk dilutor
b. Egg yolk citrate dilutor
c. Egg yolk phosphate dilutor
d. Coconut milk extender

71. In obstructive jaundice the colour of the faces is

a. Brownish green
b. Tarry black
c. Yellow colored
d. Clay colored

72. Peste des petits ruminants virus causes the disease mainly in

a. Sheep b. Goat
c. Cattle d. Buffalo

73. Vaccination of FMD is carried out

a. Twice in a year b. Once a year
c. Thrice in a year d. Every year

74. Oviductal secretions are regulated by

a. Steroid hormones b. FSH
c. LH d. Inhibin

75. Infectious canine hepatitis in dogs produces

a. Pink eye b. Blue eye
c. Pearl eye d. Red eye

76. A cytokine that stimulates the activity of B and T cells is

a. Lymphotoxin b. Interlukin-
c. Interlukin- d. Interferon

77. Which structure is absorbed most rapidly from an infected wound through increased local phagocytic activity

a. Vicryl (Polyglactin
b. PDS (Polydioxanone)
c. Catgut
d. Nylon

78. Anaesthetic is deposited around the nerve trunk in

a. Spinal anaesthesia
b. Nerve block
c. Epidural anaesthesia
d. General anaesthesia

79. The first cloned lamb Dolly was produced in the year

a. 1980 b. 1985
c. 1990 d. 1996

80. Crural hernia is also known as

a. Femoral hernia b. Inguinal hernia
c. Perineal hernia d. Scrotal hernia

81. Lymphnode biopsy smear is used for the diagnosis of

a. Theileria spp. b. Trypanosoma spp
c. Leishmania spp d. Toxoplasma spp

82. Maturation and storage of spermatozoa occur in

a. Testicles b. Epididymis
c. Seminal vesicle d. Vas deference

83. Endosporulation is the feature of

a. Eimeria spp
b. Sarcocystis spp
c. Toxoplasma spp
d. Isopora spp.

84. Ovulatory fossa is found in case of

a. Cow b. Sheep
c. Mare d. Fowl

85. Bursa of fabricius is found in

a. Cattle b. Rabbit
c. Pig d. Fowl

86. Urinary bladder is absent in

a. Cow b. Sheep
c. Mare d. Fowl

87. Gall bladder is absent in

a. Cow b. Pig
c. Mare d. Dog

88. Round ligament is found in

a. Shoulder joint
b. Hip joint
c. Knee joint
d. Elbow joint

89. Hair follicle is the part of

a. Epidermis b. Dermis
c. Hypodermis d. Epithelium

90. Purkinjee cells are found in

a. Cerebrum b. Cerebellum
c. Pons d. Medulla

91. An animal that maintain an infection in a endemic area is

a. Secondary host
b. Natural host
c. Definitive host
d. Obligatory host

92. Coffee coloured urine in cattle is characteristics of

a. Trypanosomosis b. Theileriosis
c. Babesiosis d. Sarcosystosis

93. In which of the following animal retention of placenta after birth is more common

a. Mare b. Sow
c. Monkey d. Cow

94. Hyaluronidase produced by bacteria enhances

a. Pyraemia b. Invasiveness
c. Septicaemia d. Infarction

95. Which serological test is most accepted in diagnosis of rabies

a. ELISA b. CFT
c. FAT d. AGPT

96. Blue tongue is caused by

a. Arbo virus b. Toga virus
c. Pesti virus d. Morbilli virus

97. Psittacosis in parakeets is caused by

a. Bacteria b. Virus
c. Chlamydia d. Nematode parasite

98. Pancreatic duct open into

a. Duodenum b. Liver
c. Spleen d. Abomasum

99. Verminous toxaemia is associated with

a. Strongylus vulgaris
b. Toxoplasma vitulorum
c. Cooperia pectinata
d. Strongyloides papilosus

100. Immunoglobulins are primary receptors on

a. T- cells b. B- cells
c. Macrophages d. NK- cells

101. Wizened- monkey face appearance of the protozoa in faeces is suggestive of

a. Giardiosis
b. Cryptosporidiosis
c. Amoebiasis
d. Toxoplasmosis

102. Exostosis of phalanges is called as

a. Side bone b. Canker
c. Ring bone d. Splints

103. Zebra markings are characteristic of

a. Rinderpest b. FMD
c. Stomatitis d. Tuberculosis

104. RBstrain is used for vaccine production against

a. Haemorrhagic speticaemia
b. Anthrax
c. Black Quarter
d. Brucellosis

105. One of the examples of positive feedback mechanism of estrogen is

a. Ovulation
b. Maintenance of pregnancy
c. MRP
d. Formation of CL

106. Vulvar endocarditis is seen in pigs suffering

a. Strongylosis
b. Leptospirosis
c. Streptococosis
d. Erysipelothrix rhusiopathiae

107. Acid fastness in some bacteria is due to

a. Acetic acid b. Mycolic acid
c. Butyric acid d. Teichoic acid

108. The most potent inhalant anesthetic in dog on the basis of MAC is

a. Nitrous oxide b. Methoxyflurane
c. Halothane d. Ether

109. Most susceptible species of animal to tetanus is

a. Sheep b. Cows
c. Pigs d. Horses

110. Anticoagulant of choice for estimation of glucose in a blood samples is

a. EDTA b. Double oxalate
c. Sodium fluoride d. Heparin

111. Administration of ivermectin is contraindicated in dog breed

a. German shepherd b. Doberman
c. Pug d. Collie

112. Grains eaten by a chicken is first stored in

a. Proventriculus b. Gizzard
c. Crop d. Caecum

113. Curled to paralysis in chicken is caused due to deficiency of

a. Vitamin E b. Vitamin A
c. Vitamin B1 d. Vitamin B2

114. Indian state where Kyasanur Forest Disease was first reported

a. Maharashtra b. Kerala
c. Karnataka d. Tamilnadu

115. Length of estrus cycle in swine is

a. 12 days b. 16 to 17 days
c. 19 to 21 days d. 30 days

116. A fracture which is at right angle to the axis of bone is called

a. Transverse fracture
b. Longitudinal fracture
c. Oblique fracture
d. Spiral fracture

117. SMEDI in pig is caused by

a. Arterivirus b. Parvovirus
c. Herpes virus d. Picorna virus

118. During shock, blood circulation is least affected in

a. Liver b. Kidney
c. Pituitary gland d. Adrenal gland

119. Blood cells that is most susceptible to radiation is

a. Eosinophil b. Basophil
c. Monocyte d. Lymphocyte

120. Coloustrum should be fed to calves within

a. 24 hrs of birth
b. 6 hrs of birth
c. 12 hrs of birth
d. 18 hrs birth

121. Cardiac auscultation is employed in diagnosis of

a. Cardiac insufficiency
b. Left sided heart congestive failure
c. Diaphragmatic hernia
d. Right sided heart congestive failure

122. Species of animals that acts as mixing vessel for different strains of avian influenza is

a. Pigs b. Chicken
c. Human beings d. Cows

123. Praying posture in dog is suggestive of

a. Acute pancreatitis
b. Congestive heart failure
c. Anal adenitis
d. Hip dysplasia

124. Infusion of Ringer's lactate is contraindicated in patients suffering from

a. Gastroenteritis
b. Renal insufficiency
c. Prostate enlargement
d. Hepatic insufficiency

125. Sudden death of a puppy suffering from parvo virus gastroenteritis is due to involvement of

a. Liver b. Pancreas
c. Heart d. Kidneys

126. Ovulation occurs in cow during

a. Proestrus b. Estrus
c. Metestrus d. Diestrus

127. The normal pH of bull semen is

a. 5.0 b. 6.0
c. 7.0 d. 6.8

128. Ability of a diagnostic test to detect the true positive animals is known as

a. Specificity
b. Positive productive value
c. Sensitivity
d. Likelihood ratio

129. Drug that causes certain degree of visceral analgesia is

a. Ketamine b. Pentobarbital
c. Acepromazine d. Glycopyrrolate

130. The normal ratio of calcium and magnesium in blood is

a. 3:1 b. 6: 1
c. 2: 1 d. 1:6

131. Suture pattern used to close a stump is

a. Cushings b. Lamberts
c. Parker kerr d. Continuous lock stitch

132. Rumen liquor can be preserved by few drops of saturated solution of

a. Copper sulphate
b. Mercuric chloride
c. Sodium carbonate
d. Potassium carbonate

133. Sacrum of dog is formed by the fusion of

a. Two sacral vertebrae
b. Three sacral vertebrae
c. Four sacral vertebrae
d. Five sacral vertebrae

134. The infection which are transmissible to humans by lower vertebrate animals are

a. Anthropozoonosis
b. Zooanthropozoonosis
c. Amphizoonosis
d. None of the above

135. Head quarter of OIE is located at

a. Rome b. Paris
c. Atlanta d. Geneva

136. Staphylococcus aureus produces

a. Narrow zone alpha haemolysis
b. Broad zone of beta haemolysis
c. Both a and b
d. Broader zone of alpha and narrow of beta

137. Russell bodies are related to

a. Plasma cell b. Mast cell
c. Neuron d. Macrophage

138. Placenta in primates is

a. Epitheliochoral b. Hemochorial
c. Endotheliochorial d. Syndesmochorial

139. Which of the following important sign is not seen in cow during estrus

a. Bellowing
b. Frequent urination
c. Flehman reaction
d. Homosexual behavior

140. Bottle jaw condition is seen in

a. Amphistomosis
b. Fasciolosis
c. Haemonchosis
d. All of these

141. Encephalomalacia means

a. Necrosis of brain tissue
b. Herniation of brain
c. Inflammation of the brain
d. Inflammation of meninges

142. Death of suckling calves in FMD occurs due to

a. Encephalitis b. Nephritis
c. Myocarditis d. Hepatitis

143. Demarcation between thick and thin albumin disappears in

a. Ranikhet disease
b. Infectious bronchitis
c. Egg drop syndrome
d. Infectious bursal disease

144. Effect of fatigue on simple muscle twitch is seen as

a. Increase in latent period
b. Increase in amplitude of contraction
c. Decrease in relaxation period
d. Decrease in latent period

145. Which one of the following is not a spontaneous ovulator

a. Goat b. Pig
c. Rabbit d. Camel

146. Saliva contains one of the following immunoglobulins

a. Ig G b. Ig M
c. Ig A d. Ig D

147. ADH will be released from the posterior pituitary when there is a decrease in

a. Plasma Na^+ concentration
b. Plasma volume
c. Plasma K^+ concentration
d. Plasma pH

148. Cercaria pigmentata is associated with the life cycle of

a. Liver flukes
b. Stomach flukes
c. Blood flukes
d. Hook worms

149. A pustular infection of the hair follicles of the scalp is known as

a. Kerion
b. Malignant pustule
c. Carbuncle
d. Caruncle

150. Presence of bran like scales on the skin are called

a. Pityriasis
b. Pachyderma
c. Parakeratosis
d. Hyperkeratosis

Answer Key

1. a	2. a	3. c	4. b	5. c	6. a	7. d	8. d	9. c	10. b
11. c	12. b	13. c	14. b	15. d	16. a	17. b	18. c	19. d	20. c
21. b	22. c	23. b	24. b	25. c	26. d	27. d	28. d	29. c	30. a
31. d	32. a	33. c	34. d	35. b	36. b	37. a	38. d	39. b	40. b
41. d	42. a	43. a	44. b	45. d	46. a	47. d	48. c	49. d	50. c
51. b	52. c	53. b	54. c	55. b	56. c	57. a	58. d	59. d	60. b
61. a	62. b	63. b	64. a	65. b	66. a	67. b	68. c	69. a	70. d
71. d	72. b	73. a	74. a	75. b	76. b	77. c	78. b	79. d	80. a
81. a	82. b	83. b	84. c	85. d	86. d	87. c	88. b	89. b	90. b
91. b	92. c	93. d	94. b	95. c	96. a	97. c	98. a	99. a	100. b
101. a	102. c	103. a	104. d	105. a	106. d	107. b	108. b	109. d	110. c
111. d	112. c	113. d	114. c	115. c	116. a	117. b	118. d	119. d	120. b
121. a	122. a	123. a	124. d	125. c	126. c	127. d	128. a	129. a	130. b
131. c	132. b	133. b	134. a	135. b	136. c	137. a	138. b	139. b	140. d
141. a	142. c	143. b	144. a	145. d	146. c	147. b	148. b	149. a	150. a