

Ty. B. A. B. Sc

Sem - V Reg.

Total Marks: 75 13/11/25

Time: 2½ hours

**Q1. Multiple Choice Questions (MCQ) (attempt any 15 out of 20) 15 Marks**  
(1 Mark each)

- i. Which type of cell in the epidermis is primarily responsible for producing pigment?
  - a. Keratinocyte
  - b. Melanocyte
  - c. Langerhans cell
  - d. Merkel cell
- ii. The stratum basale is part of the epidermis and is best described as:
  - a. A layer of dead cells that forms a protective barrier
  - b. A layer rich in collagen fibers
  - c. A layer containing most sweat glands
  - d. The deepest layer containing stem cells
- iii. Which histological feature distinguishes the large intestine from the small intestine?
  - a. Presence of villi
  - b. Numerous goblet cells and absence of villi
  - c. Circular folds - plicae circulares
  - d. Brush border enzymes
- iv. What is the correct order of layers from the lumen outward in the wall of the stomach and intestines?
  - a. Mucosa, submucosa, muscularis, serosa
  - b. Serosa, submucosa, mucosa, muscularis
  - c. Muscularis, serosa, mucosa, submucosa
  - d. Submucosa, mucosa, muscularis, serosa
- v. Which of the following glands is a compound tubuloalveolar exocrine gland associated with the digestive system?
  - a. Thyroid gland
  - b. Salivary gland
  - c. Adrenal gland
  - d. Pituitary gland
- vi. Study of various forms of human tissue at microscopic level is called as \_\_\_\_\_.
  - a. Clinical pathology
  - b. Histopathology
  - c. Cytopathology
  - d. Anatomical pathology
- vii. The chemical species carrying a single unpaired electron in outer orbital is \_\_\_\_\_.
  - a. free radical
  - b. cytokine
  - c. dopamine
  - d. prostaglandin
- viii. Ischemia of large intestine may result into inflammatory process called as \_\_\_\_\_.
  - a. Necrosis
  - b. Cancer
  - c. Ischemic colitis
  - d. Mesenteric ischemia
- ix. Which of the following is NOT grouped as the pattern of degeneration and infiltration.
  - a. Water overload
  - b. Metabolic overload
  - c. Storage loading
  - d. Nuclear loading

- x. \_\_\_\_\_ jaundice results for liver disease or injury.
- Hemolytic jaundice
  - Obstructive jaundice
  - Hepatocellular jaundice
  - Muscular jaundice
- xi. \_\_\_\_\_ mainly deals with mechanism and effect of diet on the toxicity.
- Veterinary toxicology
  - Forensic toxicology
  - Clinical toxicology
  - Nutritional toxicology
- xii. Amount of drug that produces therapeutic response is termed as
- Effective dose
  - Toxic dose
  - Lethal dose
  - Threshold dose
- xiii. Which of the following is NOT expected to cause Nephrotoxicity
- Mercury
  - Chloroform
  - Bromobenzene
  - Ethyl alcohol
- xiv. In toxicology, NOAEL stands for \_\_\_\_\_
- None of above effect level
  - No observed adverse effect level
  - Not outlined as effectively lethal
  - No observed effect level
- xv. \_\_\_\_\_ make up about 90-95% of the dry weight of the venom.
- Water
  - Carbohydrates
  - Protein and peptides
  - Lipids and nucleamines
- xvi. Which of the following is NOT a characteristic of binomial distribution.
- It was discovered by Denis Poisson (1837)
  - It is a discrete probability distribution.
  - It has two parameters p or q and n.
  - Standard deviation =  $npq$
- xvii. Which of the following expression is applicable to multiplication law of probability?
- $P(A+B) = P(A) + P(B)$
  - $P(A-B) = P(A) + P(B)$
  - $P(A+B) = P(A) - P(B)$
  - $P(AB) = P(A) \times P(B)$
- xviii. What does the standard error measure?
- Error between observed and expected
  - Spread of sample means around the population mean
  - Range of data
  - Correlation of variables

**xix. The Student's t test is**

- a. parametric test
- b. nonparametric test
- c. test for comparing averages
- d. test for comparing variances

**xx. If  $Z = \frac{X - \mu}{\sigma}$ , what does Z represent?**

- a. Sample mean
- b. P-value
- c. Variance
- d. Z-score (standardized value)

**Q2. A) Describe V. S. of mammalian skin**

**OR**

A) Describe T.S of Liver

B) Write short note on **Any Two. (4 marks each)**

- a) V S of mammalian tooth.
- b) Taste buds.
- c) Salivary gland
- d) Intestinal glands

**7  
Marks**

**8  
Marks**

**Q3. A) Briefly describe principles and scope of toxicology.**

**OR**

A) Briefly describe dose response relationship.

B) Write short note on **Any Two. (4 marks each)**

- a) Mycotoxin
- b) Acute Toxicity
- c) Hepatotoxicity.
- d) Ethical issues in animal studies

**7  
Marks**

**8  
Marks**

**Q4. A) Describe mechanisms of cell injury.**

**OR**

A) Define gangrene and describe gas gangrene.

B) Write short note on **Any Two. (4 marks each)**

- a) Melanosis
- b) Necrosis
- c) Cloudy swelling
- d) Scope of pathology

**7  
Marks**

**8  
Marks**

**Q5. A) Describe procedure and application of Chi- square test.**

**OR**

A) Differentiate between parametric and non parametric statistical test.

B) Write short note on **Any Two. (4 marks each)**

- a) Hypothesis
- b) Correlation
- c) Standard deviation
- d) Properties of normal distribution curve

**7  
Marks**

**8  
Marks**

-----XXXXXXXXXXXXXXXXXXXX-----

T.Y B.A/B.Sc  
Sem. II Reg.  
15/11/25  
Total Marks: 75

Time: 2½ hours

- Q1. Multiple Choice Questions (MCQ) (attempt any 15 out of 20) **15 Marks**
- i. Which of the following is **not** an epidermal derivative?
    - a) Hair
    - b) Nails
    - c) Sweat glands
    - d) Blood vessels
  - ii. The outermost layer of the skin, composed mainly of keratinized epithelial cells, is called:
    - a) Dermis
    - b) Epidermis
    - c) Hypodermis
    - d) Endoderm
  - iii. Uropygial gland is present in \_\_\_\_\_
    - a) Whale
    - b) Birds
    - c) Snake
    - d) Hedgehog
  - iv. Ceruminous gland is \_\_\_\_\_ in nature.
    - a) Apocrine
    - b) Holocrine
    - c) Merocrine
    - d) Eccrine
  - v. Placoid scales are present in \_\_\_\_\_
    - a) Catla
    - b) Rohu
    - c) Shark
    - d) Lizard
  - vi. Which of the following is not a function of bones?
    - a) Support
    - b) Protection
    - c) Hormone secretion
    - d) Locomotion
  - vii. The skull is made up of how many cranial bones?
    - a) 6
    - b) 8
    - c) 10
    - d) 12

- viii. The pelvic girdle in humans is formed by:  
a) Ilium, ischium, and pubis  
b) Femur, tibia, and fibula  
c) Sacrum and coccyx  
d) Pelvis and femur
- ix. The lumbar vertebrae are specialized for:  
a) Supporting body weight  
b) Neck movement  
c) Rib attachment  
d) Pelvic rotation
- x. The vertebral column in an adult human normally consists of:  
a) 24 vertebrae  
b) 26 vertebrae  
c) 28 vertebrae  
d) 32 vertebrae
- xi. The Flexor Digitorum Superficialis flexes \_\_\_\_\_  
a) Proximal interphalangeal joints  
b) Distal interphalangeal joints  
c) Ulna  
d) Radius
- xii. The word "ham" of hamstring muscle means \_\_\_\_\_  
a) Hollow of the knee  
b) Shin  
c) Hip  
d) Thigh
- xiii. \_\_\_\_\_ is a forelimb muscle.  
a) Soleus  
b) Gastrocnemius  
c) Sartorius  
d) Brachialis
- xiv. Biceps brachii works across \_\_\_\_\_ joints.  
a) Four  
b) Three  
c) Two  
d) Five
- xv. Gastrocnemius muscle has \_\_\_\_\_ heads.  
a) Three  
b) Four  
c) Two  
d) One
- xvi. When a part is transplanted to an individual of another species belonging to same genus is said \_\_\_\_\_  
a) Heteroplastic  
b) Xenoplastic  
c) Homoplastic  
d) Autoplastic

xvii. The temperature required for chick embryo for incubation is

- a) 20°C
- b) 27°C
- c) 30°C
- d) 37°C

xviii. The cells gradually specialize to undergo change in shape and function is called \_\_\_\_\_

- a) Cyto-differentiation
- b) Chemo-differentiation
- c) Physiological differentiation
- d) Morphological differentiation.

xix. The dark peripheral area opaca and central translucent area pellucida are distinctly visible at \_\_\_\_\_ hours.

- a) 18
- b) 33
- c) 42
- d) 72

xx. Pander described the formation of three primary germinal layers in the Chick embryo in the \_\_\_\_\_ year.

- a) 1718
- b) 1817
- c) 1917
- d) 1719

Q2. A) Give an account on basic structure of integument.

7 Marks

OR

A) Describe hoofs and claws

B) Write short note on Any Two. (4 marks each)

8 Marks

- a) Beaks and horny teeth.
- b) Multicellular gland.
- c) Down feather.
- d) Dermal scutes in reptile and birds.

Q3. A) Give an account of typical thoracic vertebra

7 Marks

OR

A) Explain the pectoral girdle

B) Write short note on any two.

8 Marks

- a) Hyoid bone
- b) Axis Vertebra
- c) Humerus
- d) Bones of Cranium

Q4. A) Write a note on Quadriceps group of muscles. **7 Marks**

OR

A) Explain adductor and abductor muscles with examples.

B) Write short note on **Any Two**. (4 marks each) **8 Marks**

- a) Rectus femoris,
- b) Brachialis
- c) Sartorius
- d) Fibularis longus

Q5. A) Describe 72 hours chick embryo **7 Marks**

OR

A) Describe 33 hours chick embryo

B) Write short note on **Any Two**. (4 marks each) **8 Marks**

- a) The process of chick embryo development
- b) Formation of endoderm
- c) Construction of Fate Map
- d) Extra embryonic membrane of chick

Time: 2½ Hours

Max. Marks: 75

Please check whether you have got the right question paper.

- N.B:**
- 1) All questions are compulsory and carry equal marks.
  - 2) Figures to the right indicate full marks.
  - 3) Draw neat and labelled diagrams wherever necessary.
  - 4) Answer the questions in proper order.

**Q. 1** Multiple Choice Questions (MCQ). Attempt any 15 out of 20  
(1 Mark each)  
Choose the correct option

15

- 1 \_\_\_\_\_ helps in the formation of prothrombin.  
a) Vitamin K   b) Vitamin D   c) Vitamin C   d) Vitamin A
- 2 Megakaryocytes are the precursor cells of \_\_\_\_\_  
a) Erythrocytes   b) Leucocytes   c) Mast cells   d) Platelets
- 3 \_\_\_\_\_ is the most abundant WBC in normal blood  
a) Lymphocytes   b) Monocytes   c) Neutrophils   d) Eosinophils
- 4 The "Philadelphia chromosome" is associated with \_\_\_\_\_  
a) Acute myeloid leukemia   b) Chronic myeloid leukemia   c) Aplastic anemia   d) Sickle cell disease
- 5 The primary function of neutrophils is \_\_\_\_\_  
a) Antibody production   b) Phagocytosis of bacteria   c) Allergic reactions   d) Blood clotting
- 6 Blood cancer such as \_\_\_\_\_ affects the lymphatic system.  
a) Leishmaniasis   b) Lymphoma   c) Thalassemia   d) Sickle cell anaemia
- 7 The enzyme \_\_\_\_\_ is primarily elevated in liver damage.  
a) TSH   b) ALT   c) LH   d) FSH

1

1

1

1

1

1

- 8 \_\_\_\_\_ is a diagnostic test used to monitor long-term glucose control in diabetic patients. 1  
a) AST b) Blood sugar test c) Glucose tolerance test d) Glycosylated haemoglobin test
- 9 Purpura is classified under \_\_\_\_\_. 1  
a) Infectious diseases b) Haemoglobinopathies  
c) Coagulopathies d) Hormonal disorders
- 10 The microscopic examination of blood helps in detecting \_\_\_\_\_ infections. 1  
a) Fungal b) Bacterial c) Parasitic d) Viral
- 11 Humoral immune response is controlled by \_\_\_\_\_. 1  
a) Activated B-cells and antibodies b) T-cells c) Mast cells d) Dendritic cells
- 12 \_\_\_\_\_ dendritic cells are found in the epidermal layer of skin. 1  
a) Interstitial b) Interdigitating c) Langerhans d) Blood
- 13 \_\_\_\_\_ immunoglobulin crosses the placental barrier. 1  
a) IgM b) IgG c) IgD d) IgA
- 14 Antigen binding fragment is formed by \_\_\_\_\_. 1  
a) Light chain only b) Heavy chain only  
c) Both heavy and light chain constant regions  
d) Both heavy and light chain hypervariable regions
- 15 Plasma cells are derived from \_\_\_\_\_. 1  
a) T-cells b) B-cells c) Macrophages d) Phagocytes
- 16 Agglutination reaction is more sensitive than precipitation for detection of \_\_\_\_\_. 1  
a) Antigens b) Antibodies c) Complement d) Antigen-antibody complex
- 17 ELISA stands for \_\_\_\_\_. 1  
a) Enzyme linked ion sorbent assay b) Enzyme linked immunosorbent assay  
c) Enzyme linked inductive assay d) Enzyme linked is serum assay

- 18 \_\_\_\_\_ test is used to detect antibodies that attack RBCs. 1  
a) ELISA b) Mancini c) Coomb's d) Slide
- 19 The term vaccine was introduced by \_\_\_\_\_. 1  
a) Edward Jenner b) Robert Koch c) Louis Pasteur d) Von Behring
- 20 Oral Polio vaccine contains \_\_\_\_\_ type of virus. 1  
a) Inactivated b) Live, attenuated c) Killed d) DNA
- Q.2 Describe any one of the following: 7  
A) Organic and inorganic constituents of plasma.  
**OR**  
A) Mechanism of blood clotting.
- B) Write short notes on any Two (4 marks each) 8  
a) Leucopoiesis  
b) Abnormalities in haemoglobin  
c) Functions of leucocytes  
d) Structure and function of erythrocytes
- Q.3 Explain any one of the following: 7  
A) Carbohydrate metabolism tests  
**OR**  
A) Scope of applied hematology
- B) Write short notes on any Two (4 marks each) 8  
a) Haemophilia  
b) Role of ALT and AST in liver function tests  
c) Blood examination in leishmaniasis  
d) Thyroid function tests
- Q.4 Give an account on any one of the following: 7  
A) Factors affecting innate immunity  
**OR**  
A) Properties of antigens
- B) Write short note on any Two (4 marks each) 8  
a) T-lymphocytes  
b) Macrophages  
c) Haptens  
d) IgG

Q.5

Describe any one of the following:

A) Precipitation reaction

OR

A) Classification of vaccines

B) Write short notes on any Two (4 marks each):

a) Ouchterlony method

b) Coomb's test

c) DNA vaccines

d) Types of grafts

\*\*\*\*\*

Time: 2 ½ Hours.

Total Marks-75

Please check whether you have got the right question paper.

- N.B: 1. All questions are compulsory and carry equal marks.  
2. Figures to the right indicate full marks.  
3. Draw neat and labelled diagrams wherever necessary.  
4. Answer the questions in proper order.

- Q1 Multiple choice questions (MCQ) (Attempt any 15 out of 20)(1Mark each) 15 Marks
- i \_\_\_\_\_ is a blood parasite of vertebrates belongs to class mastigophora. 1
- a. Amoeba
  - b. Opalina
  - c. Dysteria
  - d. Trypanosoma
- ii \_\_\_\_\_ is considered as the father of taxonomy. 1
- a. Whittaker
  - b. Linnaeus
  - c. Haeckel
  - d. Aristotle
- iii The Similar body segments are called \_\_\_\_\_. 1
- a. Coelom
  - b. Metameres
  - c. Tentacles
  - d. Parapodium
- iv Plasmodium belongs to Phylum \_\_\_\_\_. 1
- a. Sarcostigophora
  - b. Sarcodina
  - c. Ciliophora
  - d. Sporozoa
- v Coelom is the cavity between gut and the body wall, containing \_\_\_\_\_ fluid. 1
- a. Blood
  - b. Water
  - c. Coelomic
  - d. Lymph
- vi *Leucosolenia* belongs to class \_\_\_\_\_. 1
- a. Calcarea
  - b. Hexactinellida
  - c. Demospongiae
  - d. Hydrozoa

- vii \_\_\_\_\_ is the most common marine jelly fish. 1
- Hydra*
  - Aurelia*
  - Meandrina*
  - Planaria*
- viii \_\_\_\_\_ belongs to phylum Cnidaria 1
- Leucosolenia*
  - Hyalonema*
  - Euspongia*
  - Meandrina*
- ix \_\_\_\_\_ larva resembles adult liver fluke 1
- Miracidium
  - Redia
  - Cercaria
  - Metacercaria
- x \_\_\_\_\_ are commonly called as round worms 1
- Cestodes
  - Nematodes
  - Cnidarians
  - Poriferans
- xi \_\_\_\_\_ gland secrete an anticoagulant called hirudin. 1
- Salivary
  - Pancreatic
  - Liver
  - Thyroid
- xii \_\_\_\_\_ is a unique Molluscan as it lacks shells. 1
- Chiton
  - Nerita
  - Solen
  - Chaetoderma
- xiii Starfish is the best example of class \_\_\_\_\_. 1
- Ophiuroidea
  - Asteroidea
  - Echinoidea
  - Crinoidea
- xiv \_\_\_\_\_ is the connecting link between Annelida and Arthropoda. 1
- Moniliformis
  - Acron Worm
  - Peripatus
  - Sagitta
- xv Cephalothorax consists of Acron and six pairs of appendages out of which \_\_\_\_\_ appendage is a pair of prehensile Chelicerae. 1
- Forth
  - Fifth
  - Sixth
  - First

- xvi **Economic importance of *Sepia* includes \_\_\_\_\_** 1
- Source of pearls
  - Source of food, calcium and ink
  - Used for oil extraction
  - No commercial use
- xvii **The nervous system of *Sepia* is \_\_\_\_\_** 1
- Diffused
  - Ganglionated and highly centralized
  - Nerve net
  - Ladder-like
- xviii **In *Sepia*, the spermatophore is transferred to the female by \_\_\_\_\_** 1
- Mantle cavity
  - Hectocotylized arm
  - Radula
  - Tentacle sucker
- xix **\_\_\_\_\_ is the respiratory organ in *Sepia*.** 1
- Ctenidia (gills)
  - Trachea
  - Book lungs
  - Skin
- xx **Salivary gland in *Sepia* is used to \_\_\_\_\_** 1
- Confuse
  - Paralyze
  - Infect
  - kill
- Q.2 A Describe Levels of organization 7 Marks
- OR**
- A Describe and Metamerism and its evolutionary significance.
- B **Write a short note on Any Two (4 marks each)** 8 Marks
- Amoeba
  - Radial Symmetry
  - Linnaean Hierarchy
  - Evolutionary significance of Coelom
- Q.3 A Explain the distinguishing features and example of class Hydrozoa 7 Marks
- OR**
- A Explain the systematic position and morphological features of *Fasciola hepatica*
- B **Write short note on Any Two (4 marks each)** 8 Marks
- Hyalonema*
  - Aurelia*
  - Planaria*
  - Trichinella spirallis*

- Q.4 A Explain the General characters of phylum-Mollusca 7 Marks  
**OR**  
A Describe the general characters of phylum Hemichordata.
- B **Write short note on Any Two (4 marks each)** 8 Marks  
a) Peripatus a connecting link  
b) Moniliformis  
c) Sagitta.  
d) Balanoglossus.
- Q.5 A Digestive system of Sepia 7 Marks  
**OR**  
A Give general characteristics, classification, Habit and Habitat of *Sepia*.
- B **Write short note on Any Two (4 marks each)** 8 Marks  
a) Hearts of *Sepia*.  
b) Copulation and fertilization in *Sepia*.  
c) Draw a neat, well labeled diagram: dorsal and ventral view of *Sepia*.  
d) Respiratory System of *Sepia*.

\*\*\*\*\*