

M.Sc. ZOOLOGY
First Semester
Animal Physiology, Endocrinology and Neuroscience
(MSZ - 03)

Duration: 3Hrs.

Full Marks: 70

Part-A (Objective) =20
Part-B (Descriptive)=50

(PART-B: Descriptive)

Duration: 2 hrs. 40 mins.

Marks: 50

1. Write short notes on the following: (any five)

2×5=10

- a) Define Bioluminescence. Mention the advantages of Bioluminescent.
- b) What is the significance of Heat or Estrous phase in non-primate mammal?
- c) What changes steroid hormone can bring the vaginal epithelium of mammals?
- d) What is Pheromone? How pheromones can be used for attracting partners?
- e) Write a note on thermal avoidance.
- f) What is Bowman capsule and Loop of henle'?
- g) Write a short note on Myxdema.

2. Answer the following question (any five)

5×3=15

- a) Insulin and Glucagon are antagonistic in action – Explain.
- b) Write briefly the effects of growth hormone.
- c) Write a short note on Pan hypopituitarism.
- d) What is countercurrent theory of urine formation? Discuss briefly.
- e) Elaborate the role of Gonadotropin hormones in estrous cycle.
- f) Write the different phases of estrus cycle and significance of each phase.
- g) Mention about the different classes of chemoreceptors.

3. Answer the following question in details (any five)

5×5=25

- a) Discuss the mechanism of water and solute regulation in freshwater and marine animals with diagram.
- b) Describe the adenyly cyclase c AMP second messenger system.
- c) Explain the relationship between stress and hormones.
- d) Describe with suitable diagram the structure of a mammalian heart. Schematically represent how blood circulates through the circulatory system of mammals?
- e) Draw and explain the structure of a haemoglobin molecule. State four major differences between the respiratory pigments haemoglobin, haemocyanin, haemoerythrin and chlorocruorin.
- f) How carbon dioxide transport does occur through blood? Illustrate with suitable diagram.
- g) What is photoreceptor? Mention about different types of photoreceptors with suitable diagrams.

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(The figures in the margin indicate full marks for the questions)

Duration: 20 minutes

Marks – 20

PART A- Objective Type

I. Choose the correct options from the following: 1×20=20

1. In kidney which structure plays important role in counter current exchange
 - a) Glomerulus
 - b) Vasa-recta
 - c) Pelvis
 - d) Duct of Bellini
2. Collecting ducts open into
 - a) Renal papillae
 - b) Ureter
 - c) Medulla
 - d) Column of Bertini
3. The basic functional unit of human kidney is
 - a) Nephron
 - b) Pyramid
 - c) Henles loop
 - d) Nephridia
4. Which part of the nephron is impermeable to water
 - a) PCT
 - b) DCT
 - c) Descending limb of Henle
 - d) Ascending limb of Henle
5. In Ureotelic animals urea is produced by
 - a) Glycolysis
 - b) Ornithine cycle
 - c) E.M.F pathway
 - c) None of these
6. Euryhaline
 - a) Can tolerate wide range of salinity
 - b) Can tolerate narrow range of salinity
 - c) Cannot tolerate salinity changes
 - d) None of these
7. Gastric juice contains
 - a) Pepsin, trypsin, lipase
 - b) Pepsin, lipase, rennin
 - c) Trypsin, pepsin, rennin
 - d) Trypsin, lipase, rennin

8. Serum is deficient in
- a) Ca^{++} ions
 - b) Clotting factors
 - c) Proteins
 - d) None
9. The defensive function of blood is done by
- a) Albumin plasma protein
 - b) Gamma globulin plasma protein
 - c) Fibrinogen plasma protein
 - d) Prothrombin plasma protein
10. Lymphocytes in the blood of man are
- a) Included in the category of granulocytes
 - b) can produce fibrinogen
 - c) multiply in bone marrow
 - d) constitute 25% of all leucocytes
11. During erythropoiesis the following changes occur except
- a) Nucleus becomes smaller and disappears
 - b) size of the cell decreases
 - c) fine granules appear in the cytoplasm
 - d) cytoplasm changes to acidophilic
12. Factors that stimulate RBC formation
- a) Erythropetin
 - b) Hypoxia
 - c) Hemolysis
 - d) All of the above
13. ADH secretion is caused by
- a) Low blood volume
 - b) High blood volume
 - c) Low blood volume and low Blood pressure
 - d) High Blood pressure and low blood volume
14. c AMP is best matched with
- a) Steroid hormone
 - b) Protein hormone
 - c) Muscle cells
 - d) Testosterone

15. When a hormone that uses a second messenger binds to a target cell, the next thing happens is
- Phosphodiesterase is activated
 - A protein kinase is formed
 - Voltage regulated ion channel open the cell membrane
 - Adenyl cyclase is activated by G protein
16. Hypoadrenalism is also called
- Adrenal insufficiency
 - Addison's disease
 - Both (a) and (b)
 - None
17. Bioluminescent is not seen in
- Marine animals
 - Terrestrial animals
 - Fresh water
 - None of these
18. Which of the following is not a photoreceptor
- Retina
 - Muscle
 - Kidney cells
 - Nose
19. In bioluminescence production of light is by
- Conversion of physical energy to light energy
 - Conversion of chemical energy to light energy
 - Chemical to physical
 - None of these.
20. Spinal cord is the
- part of central nervous system
 - Peripheral nervous system
 - Part of both the nervous system
 - None of these
