

POST-GRADUATE DEGREE PROGRAMME

Term End Examination — December, 2024

ZOOLOGY

Paper-3A : PHYSIOLOGY AND BIOCHEMISTRY

Time : 2 hours]

[Full Marks : 50

Weightage of Marks : 80%

Special credit will be given for accuracy and relevance in the answer. Marks will be deducted for incorrect spelling, untidy work and illegible handwriting. The weightage for each question has been indicated in the margin.

1. Answer *two* questions : 9 × 2 = 18
 - a) Describe the components and functions of the respiratory chain complexes constituting each mitochondrial respiratory chain assembly.
 - b) What is active transport ? How is it different from facilitated diffusion ? Discuss the characteristics of active transport. 2 + 2 + 5
 - c) Elaborate the different types of morphological and physiological adaptations of helminth parasites within the host body.
 - d) Describe the basic structure of an electric organ and mention its importance. 4 + 5
2. Answer *three* questions : 6 × 3 = 18
 - a) What is Michaelis constant (k_m) ? Mention its characteristics. 2 + 4
 - b) What is albinism ? Discuss the causes and symptoms of different types of albinism. 2 + 4
 - c) What are pheromones ? Discuss briefly on the different types of pheromones. 2 + 4
 - d) Describe the structure of a typical lipoprotein particle with a proper diagram. 4 + 2

- e) Narrate the events in the initiation and termination of peptide chain in eukaryotes. 3 + 3
- f) Discuss how body temperature is regulated in non-sweating animals.
3. Answer *two* questions : 4 × 2 = 8
- a) What is echolocation ? Discuss the multiple uses of echolocation calls in bat. 1 + 3
- b) Write the significance of the citric acid cycle. How is it connected with neoglucogenesis ? 2 + 2
- c) Explain how high plasma LDL-cholesterol level leads to atherosclerosis.
- d) What is Donnan membrane equilibrium ? Why pH of RBC fluid is less than plasma ? 2 + 2
4. Answer *two* questions : 3 × 2 = 6
- a) What is meant by pentose phosphate pathway ? Mention its importance. 2 + 1
- b) What do you mean by redox potential and standard redox potential ? $1\frac{1}{2} + 1\frac{1}{2}$
- c) Differentiate between hibernation and aestivation. What is torpor ? 2 + 1
- d) Write a short note on muscle proteins.
-