

QP Code: 23/PT/14/IIIA

POST-GRADUATE COURSE

Term End Examination — June, 2023/December, 2023

ZOOLOGY

Paper-3A : PHYSIOLOGY AND BIOCHEMISTRY

Time : 2 hours]

[Full Marks : 50

Weightage of Marks : 80%

Special credit will be given for precise and correct answer. Marks will be deducted for spelling mistakes, untidiness and illegible handwriting. The figures in the margin indicate full marks.

1. Answer *two* questions : 9 × 2 = 18
- a) Describe why gill and lung respirations are more advanced than cutaneous respiration.
- b) Describe the role of pressure gradient and resistance on the volume flow in a closed circulatory system.
- c) Write notes on redox potential and proton pump. Describe the relation between electron transfer potential and redox potential mentioning Nernst equation. (2½ + 2½) + 4
- d) What is the difference between bioluminescence and chemiluminescence ? Describe how bioluminescence is regulated in animals. 2 + 7
2. Answer *three* questions : 6 × 3 = 18
- a) Write short notes on Ambient Noise Imaging (ANI) and vomeronasal organ. 3 + 3
- b) What is Caldesmon ? Describe the role of caldesmon in the contraction of muscle. 2 + 4

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- c) Write the difference between acclimatization, acclimation and adaptation. What do you mean by levels of adaptation ? 3 + 3
- d) What are the characteristic features of extreme aquatic environment ? Mention how animals are adapted in this environment. 2 + 4
- e) Describe how ribose is synthesised in the pentose phosphate pathway (PP Pathway) and mention where this pathway will occur. 5 + 1
- f) Mention the differences between substrate level phosphorylation and oxidative phosphorylation.
3. Answer *two* questions : 4 × 2 = 8
- a) What do you mean by homeothermic and poikilothermic animals ? 2 + 2
- b) Describe briefly the role of neuro-endocrine system in hibernation process.
- c) What are the differences between active and passive carrier-mediated transports ?
- d) Describe the biosynthesis of urea and mention where this pathway will occur. 3 + 1
4. Answer *two* questions : 3 × 2 = 6
- a) What do you mean by rate-limiting enzymes ? Mention the important characters of these enzymes. $1\frac{1}{2} + 1\frac{1}{2}$
- b) Write short notes on Ribozymes and Isozymes. $1\frac{1}{2} + 1\frac{1}{2}$
- c) What do you mean by polysomes ? Mention its role in the translation mechanism. 1 + 2
- d) Mention any three important biological functions of plasma lipoproteins.