

ZOOLOGY
Paper – II

Time Allowed : **Three Hours**

Maximum Marks : **200**

Question Paper Specific Instructions

Please read each of the following instructions carefully before attempting questions :

*There are **EIGHT** questions in all, out of which **FIVE** are to be attempted.*

*Questions no. **1** and **5** are **compulsory**. Out of the remaining **SIX** questions, **THREE** are to be attempted selecting at least **ONE** question from each of the two Sections A and B.*

Attempts of questions shall be counted in sequential order. Unless struck off, attempt of a question shall be counted even if attempted partly. Any page or portion of the page left blank in the Question-cum-Answer Booklet must be clearly struck off.

All questions carry equal marks. The number of marks carried by a question/part is indicated against it.

*Answers must be written in **ENGLISH** only.*

Neat sketches may be drawn, wherever required.

SECTION A

- Q1.** (a) Differentiate between active transport and passive transport. 8
- (b) Explain the mechanism of sex determination in nematodes. 8
- (c) Describe the various methods of fossilization in animals. 8
- (d) Discuss the operative principles of International Code of Zoological Nomenclature. 8
- (e) "Mutation is a raw material for evolution." Justify. 8

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- Q2.** (a) What are lysosomes ? Give an illustrated account on polymorphism in lysosomes. 15
- (b) Define mobile DNA elements. Explain the general structure and mechanism of transposition of IS elements in prokaryotes. 15
- (c) Give an illustrated account on evolutionary history of Elephant. 10
- Q3.** (a) Describe the assumptions and applications of Hardy-Weinberg law in calculating gene frequency. 15
- (b) Define chromosomal aberrations. Describe different types of chromosomal aberrations with suitable examples. 15
- (c) Differentiate between Euchromatin and Heterochromatin. 10
- Q4.** (a) Describe the different kinds of taxonomic keys and mention their merits and demerits. 15
- (b) Describe the ultrastructure and functions of Golgi Body. 15
- (c) How does the regulation of gene expression occur in prokaryotes ? 10

SECTION B

- Q5.** (a) Differentiate between oxidation and substrate level phosphorylation. 8
- (b) Explain the hormonal regulation of amphibian metamorphosis. 8
- (c) Explain the phenomenon of chloride shift for the transport of O₂ and CO₂. 8
- (d) Illustrate the fate map of chick during gastrulation. 8
- (e) Explain the factors influencing the kinetics of primary immune response. 8
- Q6.** (a) Explain the applicability of laws of thermodynamics to biological systems with suitable examples. 15
- (b) Define Spermatogenesis. Describe different phases of spermatogenesis with suitable diagram. 15
- (c) Define morphogen. Explain the interaction between morphogen, induction and morphogenesis during early embryonic development. 10
- Q7.** (a) Define Apoptosis. Explain the characteristics, significance and molecular pathways of apoptosis. 15
- (b) Describe the structural anatomy and functions of liver in digestion. 15
- (c) Discuss the basic structure and functions of Immunoglobulin. 10
- Q8.** (a) What is the site of oxidative phosphorylation ? Describe electron transport and oxidation-reduction potentials in energy production. 15
- (b) Give an illustrated account on ionic bases of nerve conduction. 15
- (c) Describe the interrelationship between telomere length and ageing. 10

