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 O_2 and CO_2. *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*