

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) Explain the hormonal regulation of sex determination in mammals. 8
- (b) What is reverse transcription ? Explain it with an example. 8
- (c) Briefly explain Neo-Darwinism. 8
- (d) "Lysosomes are the suicidal bags of the cell." Justify. 8
- (e) Define Cladistics. Comment on its significance. 8

- Q2.** (a) Define Mutation. Explain various physical and chemical mutagens with suitable examples. 15
- (b) Give an illustrated account of the evolutionary history of horse. 15
- (c) Briefly describe the modern methods of taxonomy for animals. 10
- Q3.** (a) Explain the transport of large molecules across the plasma membrane. 15
- (b) What are Transposons ? Explain the general structure and mechanism of transposition of Tn3 elements in prokaryotes. 15
- (c) Differentiate between Parapatric and Sympatric speciation. 10
- Q4.** (a) Describe with well-labelled diagram, the stages involved in Meiotic prophase. 15
- (b) Write an account of the methods of determination of the age of fossils. 15
- (c) Give an account of the molecular mechanism of crossing over. 10

SECTION B

- Q5.** (a) Describe the role of cholesterol in steroidogenesis. 8
- (b) Explain how animals can survive in varying salinities. 8
- (c) Briefly describe the sliding filament theory of muscle contraction. 8
- (d) Illustrate the fate map of frog during gastrulation. 8
- (e) Differentiate between primary and secondary immune response. 8
- Q6.** (a) Give a diagrammatic representation of citric acid cycle and discuss its role in metabolism. 15
- (b) Describe the process of synthesis, secretion, and action of acetylcholine during synaptic transmission. 15
- (c) Give a brief account of hormonal regulation of metamorphosis in insects. 10
- Q7.** (a) Discuss the laws of thermodynamics and their applications in biological systems. 15
- (b) Define Apoptosis. Explain its mechanism with suitable example. 15
- (c) Discuss the structure of inner ear and explain its mechanism in hearing. 10
- Q8.** (a) Give an account of the genetic basis of axis specification with one suitable example. 15
- (b) What is blood coagulation ? Enumerate the various steps involved in blood coagulation. 15
- (c) Define Teratogen. Briefly explain the different teratogenic agents. 10

