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 role of endoplasmic reticulum in lipid biosynthesis. *8*

(b) Explain the types of transposons with a note on any two transposition events. *8*

(c) Describe the different types of vectors. *8*

(d) Explain how mimicry helps animals to lead a successful life. *8*

(e) Discuss the various types of zoological nomenclature with suitable examples. *8*

Q2. (a) Discuss the application of pedigree analysis in identifying diseases. *15*

(b) What are lysosomes ? Discuss their role in intracellular digestion. Give an example of lysosomal storage disorder. *15*

(c) Describe the steps involved in gene regulation in eukaryotes. *10*

Q3. (a) With a neatly labelled diagram, explain sodium-potassium pump and its role in membrane transport. *10*

(b) Explain the mode of speciation in evolution with examples. *15*

(c) Explain how protein synthesis is the key to the expression of biological information. *15*

Q4. (a) Explain how unknown five-toed Condylarthra evolved in Equus. State the evolutionary pattern in each geological era. *10*

(b) Discuss the structure and functions of Ribosomes and Golgi bodies with an emphasis on secretion of proteins. *15*

(c) Describe the mechanism of DNA replication. *15*

SECTION B

Q5. (a) Explain enzyme kinetics with suitable examples. *8*

(b) Explain how the biological energy transformations obey the laws of thermodynamics. *8*

(c) Explain the extrinsic pathway for initiation of blood clotting. *8*

(d) Describe the respiratory regulation of acid-base balance in body fluids. *8*

(e) What is neoteny ? Discuss the phenomenon in Amphibia giving suitable example. *8*

Q6. (a) Draw the structure of cAMP. Explain how cAMP acts as second messenger for β-adrenergic receptor system. *15*

(b) Describe the molecular mechanism of skeletal muscle contraction. *10*

(c) Define cloning. Explain somatic cell nuclear transfer method with suitable examples. *15*

Q7. (a) Discuss the transport of oxygen in the blood. Give an account of various factors that shift oxygen-hemoglobin dissociation curve. *15*

(b) Explain enzyme specificity with suitable examples. How is enzyme activity controlled ? *15*

(c) Describe the process of metamorphosis in frogs and explain the role of thyroxin. *10*

Q8. (a) What is embryonic induction ? Describe the mechanism of induction giving examples. *15*

(b) Enlist the composition of bile. Discuss the role of bile salts in fat digestion and absorption. *15*

(c) What is immunity ? Giving suitable examples explain humoral and cell mediated immunity. *10*