Indian Forest Service (Main)
Examination, 2024

JBNV–B–ZOLY

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.

Question Nos. **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

1. *(a)* Differentiate between inner and outer mitochondrial membrane. 8

(b) Write about RFLP and AFLP. 8

(c) Briefly discuss the role of natural selection in industrial melanism. 8

(d) Explain different steps in the activation of receptor protein tyrosine kinase with diagrams. 8

(e) Write a note on various rules of nomenclature in animal system. 8

2. *(a)* What are lysosomal enzymes? Explain their origin, structure and functions. 15

(b) Explain Mendel's law of inheritance and its significance. 15

(c) Give a brief account of evolution of man in Pleistocene period. 10

3. *(a)* Describe the phenomenon of linkage with example. Why is linkage an exception to Mendel's law of segregation? 15

(b) What is fossil? Explain different types of fossils and their significance. 15

(c) Describe semiconservative replication of DNA with experimental evidences. 10

4. *(a)* What is variation? Give an account of different kinds of variations and its importance in organic evolution. 15

(b) What is mitotic apparatus? Describe its structure and its role during cell division. 15

(c) How does the regulation of gene expression occur in eukaryotes? 10

SECTION—B

5. *(a)* Define the primary structure of proteins and its application in biological studies. 8

(b) Explain the role of hormones in digestion. 8

(c) What is cyclic AMP? Describe the structure of cyclic AMP and mention its biochemical role. 8

(d) What is thermoregulation? How do homeothermic animals sustain by maintaining their body temperature in harsh climatic condition? 8

(e) Write briefly the mechanism of embryo transfer in animals and its application. 8

6. (a) What is bioenergetics? Explain its role in the catabolic processes of glycolysis and TCA cycle. 15

(b) What is morphogenesis? Explain the mechanism of changes in the shape of cells during morphogenesis. 15

(c) With suitable diagrams, explain the mechanism of transmission of nerve impulse in a neuron. 10

7. (a) How does glucagon regulate the glycogen metabolism? 15

(b) Write a note on different types of placenta in mammals. Explain the role of hCG in human being. 15

(c) Using R groups properties, classify amino acids. 10

8. (a) Describe the structure and functions of antibody isotypes with diagrams. 15

(b) Write an account on various types of muscles and their functions. 15

(c) What is regeneration? Describe regenerative ability in hydra, planaria and urodele amphibians. 10

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