Indian Forest Service
(Main) Exam, 2020

JKLO-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.*

*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*