PG/IIS/ZOO/202.1 & 202.2/23
(CCAE)(Old)

M.Sc. 2nd Semester Examination, 2023

ZOOLOGY

PAPER – ZOO-202.1 & 202.2 (CCAE)(Old)

Full Marks : 40

Time : 2 hours

The figures in the right hand margin indicate marks

Candidates are required to give their answers in their own words as far as practicable

PAPER – ZOO 202.1

(*Biophysics*)

1. Answer any *two* questions from the following : 2×2

(*a*) The earth is an 'open as well as closed' system- Justify.

(*b*) What happens when mammalian RBCs are placed in hypotonic and hypertonic solutions, respectively ?

(*c*) What do you mean by flip-flop movement of lipid molecules in cell membrane ?

(*d*) Distinguish between solid aerosol and liquid aerosol with examples.

2. Answer any *two* questions from the following : 4×2

(*a*) What is electrodialysis ? Write a note on its application. $1 + 3$

(*b*) Name the principal buffer of blood plasma and state its composition. What is its pH and how does it exert its buffering action ? $1 + 3$

(*c*) Describe the design and operation of the electron gun of a transmission electron microscope. 4

(*d*) Tabulate the differences between lyophilic and lyophobic sols. 4

3. Answer any *one* question from the following : 8×1

(*a*) Define and exemplify isolated, closed and open thermodynamic systems. Explain first law of thermodynamics. Why can this law be explained with closed systems only ? $3 + 4 + 1$

(*b*) Distinguish between extrinsic and intrinsic membrane proteins. Describe an experiment to prove the mobility of protein molecules in the plasma membrane. Name two fixatives used in electron microscopic study of cells. 3 + 4 + 1

PAPER – ZOO 202.2

(*Biochemistry*)

4. Answer any *two* questions from the following : 2 × 2

(*a*) What is the difference between domain & motif ?

(*b*) Categorize amino acids based on the side chain.

(*c*) What is transamination ?

(*d*) What is peroxisomal β oxidation ?

5. Answer any *two* questions from the following : 4 × 2

(*a*) What is Ramachandran's diagram ? Draw a Ramachandran's plot showing the secondary structure of protein. 2 + 2

(*b*) Explain enzyme inhibition with Line-weaver burk plot. 4

(*c*) Briefly describe the 'Carnitine transport over the mitochondrial membrane. 4

(*d*) Elaborate the oxidative phase of pentose phosphate pathway. 4

6. Answer any *one* question from the following : 8×1

(*a*) (*i*) Describe the α helix and β pleated sheet with suitable diagram showing patterns of hydrogen bonds. 5

(*ii*) Write a short note on Ion-exchange chromatography. 3

(*b*) (*i*) What is urea cycle ? Briefly describe the process with suitable flow diagram. 2 + 2

(*ii*) Describe the payoff phase of glycolysis mentioning the enzyme involved. 3

(*iii*) How many $NADH_2$ is produced in TCA cycle ? 1
