

PG (CBCS)
M.Sc Semester- II Examination, 2023
ZOOLOGY
PAPER: ZOO 202
(BIOPHYSICS & BIOCHEMISTRY)

Full Marks: 40

Time: 2 Hours

The figures in the right-hand margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.

Write the answer for each unit in separate sheet

UNIT: ZOO 202.1

BIOPHYSICS

GROUP-A

1. Answer any **TWO** from the following questions: 2×2=4
- a) The earth is an 'open as well as closed' system-justify.
 - b) What is reverse osmosis? Exemplify its application.
 - c) Point out the differences between facilitated diffusion and active transport with examples.
 - d) Distinguish between solid aerosol and liquid aerosol with examples.

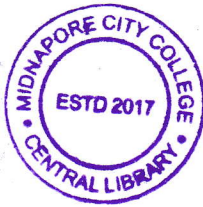
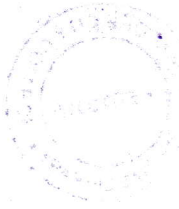
GROUP-B

2. Answer any **TWO** from the following questions: 2×4=8
- a) What do you mean by isoelectric pH of a protein? Explain with the help of suitable illustration, what happens to the ionic status of a protein if the pH of the medium is lowered below or raised above its isoelectric pH? 1+3
 - b) Distinguish between symport and antiport with examples. 4
 - c) How does fluorescence recovery after photobleaching prove the mobility of protein molecules through the lipid bilayer of plasma membrane. 4
 - d) What is dialysis? Write a note on clinical importance of dialysis in renal failure patients. 1+3

GROUP-C

3. Answer any **ONE** from the following questions: 1×8=8
- a) Explain first law of thermodynamics. Why is the law explained with reference to a closed system only?
Describe the design and operation of the electron gun of a TEM. 3+1+4
 - b) Write a note on asymmetric distribution of proteins in cell membrane and the significance thereof. Distinguish between flip-flop movement and translational movement of lipid molecules in cell membrane. 6.84 g of sucrose (molecular weight = 342) is dissolved in 200 ml water at 27°C. Calculate the osmotic pressure of the solution. 3+2+3

(P.T.O)



(2)

UNIT: ZOO 202.2
BIOCHEMISTRY

GROUP-A

4. Answer any **TWO** from the following questions: 2×2=4
- a) How does hydrogen bonding affect protein stability?
 - b) Why are beta sheets called pleated? Where is it found?
 - c) What do you mean by allosteric modulation?
 - d) How proton motive force is used to drive ATP synthesis?

GROUP-B

5. Answer any **TWO** from the following questions: 2×4=8
- a) What are catecholamines? Briefly describe the biosynthetic pathways of nonepinephrine biosynthesis. 1+3
 - b) Differentiate ammonotelism, ureotelism and uricotelism with examples.
 - c) Explain competitive and noncompetitive inhibition with proper graphical representation.
 - d) Why is the TCA cycle considered an amphibolic pathway?

GROUP-C

6. Answer any **ONE** from the following questions: 1×8=8
- a) Why is β -oxidation called so? Describe β -oxidation of Palmitic acid. How many ATPs are formed by this process? 1+5+2
 - b) Write down the key steps and regulations of gluconeogenesis from pyruvate. What is Cori cycle? 5+3
