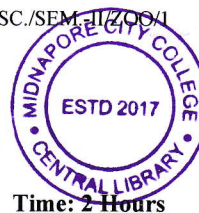


PG CBCS
M.Sc. Semester-II Examination, 2022
DEPARTMENT OF ZOOLOGY
PAPER: ZOO 202



Full Marks: 40

Time: 2 Hours

Write the answer for each unit in separate sheet

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.

ZOO 202.1: BIOPHYSICS**Marks: 20****GROUP-A****1. Answer any two questions:****2×2=4**

- The earth is an open as well as closed system-explain.
- What is reverse osmosis? Exemplify its application.
- What do you mean by flip-flop movement of lipid molecules in cell membrane?
- Distinguish between solid aerosol and liquid aerosol with examples.

GROUP-B**2. Answer any two questions:****2×4=8**

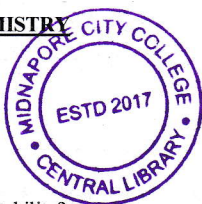
- What is electro dialysis? How is it used in the production of drinking water from sea water? **1+3**
- What do you mean by pI of a protein? Explain with the help of suitable illustration, what happens to a protein pH of the medium is lowered below or raised above its pI? **1+3**
- How does cell fusion study prove the mobility of protein molecules through the lipid bilayer of plasma membrane?
- Describe the design and operation of the electron gun of a transmission electron microscope.

GROUP-C**3. Answer any one question:****1×8=8**

- Explain first law of thermodynamics. Why is the law explained with reference to a closed system only? The latent heat of evaporation of water is 536cal/g- calculate ΔH and ΔE in converting 1 mole of water at 100°C into steam at the same temperature, assuming water to behave as an ideal gas. **3+1+4**
- With proper reasoning, cite one example each of: (i) two solutions are isosmotic but not isotonic, and (ii) two solutions are isotonic but not isosmotic. State Van't Hoff's laws of osmosis. 6.84 g of sucrose (molecular weight= 342) is dissolved in 200ml water at 27°C. Calculate the osmotic pressure of the solution. **3+2+3**

(P.T.O.)

(2)

ZOO 202.2: BIOCHEMISTRY**Marks: 20****GROUP-A****1. Answer any two questions:****2×2=4**

- a) What do mean by reductive redox potential?
- b) What is the role of di-sulphide bond in protein stability?
- c) Hydrophobic interaction between molecules is not a true chemical bond formation-why?
- d) What is the effect of pH in enzyme activity?

GROUP-B**2. Answer any two questions:****2×4=8**

- a) What is the parallel β -sheet structure of protein? Distinguish between domain and motif of protein structure? 2+2
- b) Why is the citric acid cycle amphibolic? Describe the gluconeogenesis pathway from pyruvate? 1+3
- c) What are catecholamines? Show the pathway of their biosynthesis. 1+3
- d) Give two examples of mitochondrial electron transport chain inhibitors? How is ATP synthesized by F_0-F_1 complex? 1+3

GROUP-C**3. Answer any one question:****1×8=8**

- a) What do you mean by Michaelis-Menton equation? How do we determine K_m value? Write the differences between competitive and non-competitive inhibition. What is isozyme? 2+2+3+1
- b) How do you distinguish saturated fatty acid from unsaturated fatty acid? Write down the process of β -oxidation of palmitic acid. How many ATPs are formed by this process? 2+4+2
