

I Semester B.Sc. Examination, Nov./Dec. 2007
(Semester Scheme)
BIOCHEMISTRY - I

Time : 3 Hours

Max. Marks : 60

Instruction : Answer any six questions from Part A, any eight questions from Part B.

PART - A

Answer any six of the following :

6×2=12

1. What are isotonic solutions ?
2. State Hund's rule.
3. Define Hybridisation.
4. What are Zwitter ions ? Write the Zwitter ionic structure of an amino acid.
5. What is meant by intrinsic viscosity ?
6. What are surfactants ? Give an example.
7. What are derived SI units ? Give an example.
8. What is an isotherm ?
9. What is ionic strength of a solution ?
10. What is meant by weight average molecular weight ?

PART - B

Answer any eight of the following :

8×6=48

11. a) What are quantum numbers ? Give their significance.
b) Describe the relationship between bond energy and bond length. (4+2)
12. a) Define electron affinity. How does it vary across a period and down the group ?
b) Explain hydrophobic forces with an example. (4+2)

P.T.O.

13. a) Describe the determination of molar mass of a non-volatile solute by depression in freezing point method. 4
b) Define the term molal elevation constant. 2
14. a) Describe the construction and working of Geiger-Muller counter. 4
b) State group displacement law. 2
15. a) 1.2×10^{-3} Kg of a solute is dissolved in 20×10^{-3} Kg of solvent. The boiling point of the solvent is increased by 0.4 K. Calculate the relative molar mass of the solute. (Given $K_b = 0.52 \text{ K Kg mol}^{-1}$). 4
b) State Van't-Haff-Bogle's law. 2
16. a) Explain the acid-base concept based on Lewis theory. 3
b) What is isoelectric pH ? How is it determined ? 3
17. a) What are buffers ? Explain buffering action of an acidic buffer. 3
b) Convert the volume 200 cm^3 into
i) Litre ii) dm^3 and iii) m^3 3
18. a) How do you determine the pH of a solution using quinhydrone electrode ? 4
b) Define solubility product. 2
19. a) What is electrochemical series ? Give two applications. 4
b) Define equivalent conductance. Give its SI unit. 2
20. a) Describe the determination of viscosity of a liquid using Ostwald's viscometer. 4
b) Give the postulates of valence bond theory. 2
21. a) Using molecular orbital theory, explain the formation of oxygen molecule and its magnetic property. 4
b) Define lattice energy. 2
22. a) Distinguish between physical and chemical adsorption. 4
b) Water has maximum density at 4°C . Give reason. 2