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I SEMESTER B.Sc. EXAMINATION – MARCH/APRIL 2022

SCHEME: SEMESTER- CBCS

BIOCHEMISTRY

CHEMISTRY OF BIOMOLECULES

Time: 03 Hours

Max Marks: 80

Instructions to Candidates: Answer any TEN questions from PART-A and any SIX questions from PART-B.

PART- A

1.

2x10=20

- a) Mention any two important discoveries of kreb.
- b) What are metalloporphyrins? Name the metal ion present in cytochrome.
- c) Mention the steps involved in Nitrogen cycle.
- d) Write the roles of selenium compounds in biological system.
- e) How does ozone contribute to sustain life on earth?
- f) Write a note on toxicity of arsenic in biological system.
- g) What is Donnan membrane equilibrium?
- h) Give any two applications of adsorption.
- i) Define buffer capacity. Name the indicator used in strong acid and weak base titration.
- j) What is quantum efficiency?
- k) How do covalent bonding influence its solubility?
- l) Differentiate electrophiles from nucleophiles.

PART- B

6x10=60

2. a) Name any three biomolecules found in living organisms and mention one function of each. 3
- b) Define co-ordination number. Differentiate double salt from complex salt. 3
- c) Discuss the colour and magnetic properties of transition metals. 4
3. a) Write a note on functions of : 5
 - i) Vit B-12
 - ii) Bile pigments.
- b) Define disintegration constant. Give the applications of ^{32}P . 5
4. a) Discuss the environmental pollution caused by compounds of nitrogen. 5
- b) Give the biological importance of phosphorus compounds. 5

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5. a) Define equivalent weight of a base. Calculate the mass of oxalic acid crystals required to prepare 250 ml of 0.1 N solution. (Given mol.wt. of oxalic acid=126) 4
- b) Explain the role of water as a reactant in biological system. 3
- c) Explain the laws of osmotic pressure. 3
6. a) Define: 3
- i) Relative lowering of vapour pressure
- ii) Viscosity
- iii) Partition coefficient
- b) What is ionic product of water? Give an example for Lewis acid and base. 3
- c) Explain the construction, working and advantages of calomel electrode. 4
7. a) What is isoelectric point of an amino acid? Draw the titration curve of amino acid Vs NaOH 4
- b) Write a note on principle of IR spectroscopy and give any two applications of fluorescence spectroscopy. 6
8. a) Give IUPAC name of the following: 6
- i)
- $$\begin{array}{c} \text{OH} \\ | \\ \text{CH}_3 - \text{CH} - \text{CH}_2 - \text{COOH} \end{array}$$
- ii)
- $$\begin{array}{c} \text{CH}_3 - \text{CH} - \text{CH}_2\text{OH} \\ | \\ \text{H}_2\text{N} \end{array}$$
- iii)
- $$\begin{array}{c} \text{CH}_3 - \text{CH} - \text{CH} = \text{CH}_2 \\ | \\ \text{C}_2\text{H}_5 \end{array}$$
- b) What is hydrophobic interaction? Explain dipole-dipole interaction. 4
9. a) What is inductive effect? Explain with an example. 3
- b) Give an account of properties of ionic bond. 3
- c) Explain elimination reaction and free radicals. 4

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