

B.Sc. Semester - 1 (CBCS) Examination
Jan/Feb.-2022 (NEW COURSE)
BIO-CHEMISTRY(CORE)

Time: 1:30 Hours

Marks: 42

Instructions:

1. Figures to the right indicate marks.
 2. There are five questions in the question paper.
 3. Answer any three of the following questions.
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- Q-1**
- A Answer the following (any one out of two)..... 07**
1. Explain Water as a biological solvent, physical and chemical properties of water, importance of water for living organisms.
 2. what are Chemical Bonds? Enlist types and their definition, explain any one in detail and their importance in structure of biomolecules.
- B Attempt Any one (any one out of two)..... 04**
1. Comment on bond energy and atom.
 2. Explain Dipole moment and molecular structure.
- C Attempt Any three (any three out of five)..... 03**
1. Give one difference between polar & nonpolar bond.
 2. Define Molecule and give one example of it.
 3. Define electrophiles.
 4. Define Nucleophiles.
 5. Comment on Van der Waals forces.
- Q-2**
- Q.A Answer the following (any one out of two)..... 07**
1. Write note on Biochemical equation-oxidation reduction reaction-redox potential and its role in biological reaction.
 2. Explain second law of thermodynamics.
- Q.B Attempt Any one (any one out of two)..... 04**
1. Write note on ATP.
 2. Give the significance of thermodynamics property with example.
- Q.C Attempt Any three (any three out of five)..... 03**
1. Define first law of thermodynamics.
 2. What do you mean by Redox reaction?
 3. What is isothermal process?
 4. Define: Gibbs free energy.
 5. Give 2 examples of High-energy compounds.
- Q-3**
- A Answer the following (any one out of two)..... 07**
1. Explain shape of titration curve of strong acid and strong base.
 2. Write a detailed note on pH meter. Write the role of bicarbonate, as physiological buffer.
- B Attempt Any one (any one out of two)..... 04**
1. Write about dissociation constant of acid and base.
 2. Write a brief note on Henderson– Hesselbalch equation.
- C Attempt Any three (any three out of five)..... 03**
1. Define buffer. Give 2 examples.
 2. Comment on the term pH and pOH.
 3. Define Arrhenius acid and base.
 4. What do you mean by pKa value?
 5. Define dissociation constant.
- Q-4**
- A Answer the following (any one out of two)..... 07**
1. Give idea about diffusion. Write importance of diffusion in living systems.
 2. Define the term viscosity. Give the factors affecting on viscosity.

- B Attempt Any one (any one out of two)..... 04**
1. Discuss importance and applications of adsorption.
 2. What is osmosis? Write the types and application of osmosis.
- C Attempt Any three (any three out of five)..... 03**
1. What do you mean by diffusion?
 2. Define: adsorption.
 3. Write one application of diffusion.
 4. What is viscometer?
 5. If Red Blood Cell are suspended in hypertonic solution of Na Cl, water flows out of RBC and the cytoplasm shrinks, this phenomenon referred to as ____

Q-5

- A Answer the following (any one out of two) 07**
1. Give formula for Normal, Molar, and Molal solution and prepare 2 Molar, 1.5 Normal and 1 Molal solution of NaOH (M. W. 40).
 2. Explain concept of density and specific gravity. Solve the below problems.
 - (a) If 5 ml of ethanol has a mass of 3.9 gm, what is the density?
 - (b) If the density of mercury is 13600 kg/m^3 , find the specific gravity of mercury.
- B Attempt Any one (any one out of two)..... 04**
1. Define solution and state factors affecting solution formation.
 2. a. Define the terms: Stock solution & Working solution.
b. Explain: Percent solution and its preparation 110 ml of 40% Glucose (M.W. 180.156) solution.
- C Attempt Any three (any three out of five)..... 03**
1. Define Normality.
 2. Define Molarity.
 3. Define Equivalent Weight.
 4. Define Mole.
 5. Define Solubility.
