

B.Sc. Semester - 1 (CBCS) Examination
Jan/Feb.-2022 (OLD 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. What are Chemical Bonds? Enlist types and their definition, explain any one in detail and their importance in structure of biomolecules.
2. Explain Water as a biological solvent, physical and chemical properties of water, importance of water for living organisms.

B Attempt Any one (any one out of two)..... 04

1. Comment on atom and bond energy.
2. Explain Dipole moment and molecular structure.

C Attempt Any three (any three out of five)..... 03

1. Define electrophiles.
2. Define Nucleophiles.
3. Comment on Van der Waals forces
4. Give one difference between polar & nonpolar bond.
5. Define Molecule and give one example of it.

Q-2**Q.A Answer the following (any one out of two)..... 07**

1. Explain second law of thermodynamics with an example.
2. Write note on Biochemical equation-oxidation reduction reaction-redox potential and its role in biological reaction.

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. State first law of thermodynamics.
2. What do you mean by Redox reaction?
3. What is isothermal process?
4. Define: Gibbs free energy.
5. Give two 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 a brief note on Henderson– Hesselbalch equation.
2. Write about dissociation constant of acid and base.

C Attempt Any three (any three out of five)..... 03

1. Define Arrhenius acid and base.
2. Define buffer. Give two examples.
3. Comment on the term pH and pOH.
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. Explain the term diffusion. Write importance of diffusion in living systems.
2. Define the term viscosity. Discuss 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. 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 ____
 2. What do you mean by diffusion?
 3. Define: adsorption.
 4. Write one application of diffusion.
 5. What is viscometer?
- 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. 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.
 2. Define solution and state factors affecting solution formation.
- C Attempt Any three (any three out of five)..... 03**
1. Define Equivalent Weight.
 2. Define Mole.
 3. Define Normality.
 4. Define Molarity.
 5. Define Solubility.
