

B.Sc. Semester - 1 (CBCS) Examination
Nov./Dec. -2018 (New Course)
BIO-CHEMISTRY (CORE)

Time: 2:30 Hours

Marks: 70

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate marks.

-
- Que-1 (A) Answer the following. (Any one) (07)
(1) Explain covalent bond with suitable example with illustration.
(2) Write the significance of secondary bonds in biological systems.
- (B) Attempt any one. (out of two) (04)
(1) Explain the formation of ionic bond in sodium chloride. (with suitable diagram)
(2) Explain non polar interactions with suitable examples.
- (C) Attempt any three. (out of five) (03)
(1) Define: Anion write two examples.
(2) What is bond energy? Give its unit.
(3) Give the definition of Electro negativity.
(4) What is electrophiles?
(5) What is isotope? Give example.
- Que-2 (A) Answer the following. (Any one) (07)
(1) Explain biological oxidation Processes and significance in the physiological system.
(2) Explain second law of thermodynamics.
- (B) Attempt any one. (Out of two) (04)
(1) Give the significance of thermodynamics property with example.
(2) Write about the significance of coupling reaction with suitable example.
- (C) Attempt any three. (Out of five) (03)
(i) What is standard state of system?
(ii) What is system and surrounding?
(iii) What is Van't Hoff plot?
(iv) Define: Relative affinity of electron.
(v) Which molecule is considered as currency of the cell?
- Que-3 (A) Answer the following. (Any one) (07)
(1) Derive and write significance of Henderson Hasselbalch equation.
(2) Define physiological buffer and explain bicarbonate buffer in detail.
- (B) Attempt any one. (Out of two) (04)
(1) Write the difference between acid and base?
(2) Write a note on Calomal electrode used in pH meter.
- (C) Attempt any three. (Out of five) (03)
(1) Define dissociation constant.
(2) Write the use of titration curve of acid/base.
(3) Draw the diagram of pH scale according to acidity and alkalinity.
(4) When HCl (aq) is exactly neutralized by NaOH(aq), What will be the effect on the hydrogen ion concentration in the resulting mixture?
(5) Write formula of pOH.
- Que-4 (A) Answer the following. (Any one) (07)
(1) Discuss importance and applications of adsorption.
(2) Define Diffusion and write importance of diffusion in living systems.

- (B) Attempt any one. (Out of two) (04)
- (1) Calculate the osmolarity of 1 M solutions of the following: Glucose, CaCl_2 and FeCl_3 .
 - (2) Give the applications of viscometry.
- (C) Attempt any three. (Out of five) (03)
- (1) How you can check the viscosity of solution
 - (2) Why polar molecule can not easily cross the plasma membrane?
 - (3) Define the term: Absorption.
 - (4) Why diffusion is faster in air compared to the liquid solutions?
 - (5) Write two factors which affect the viscosity of the solution.
- Que-5 (A) Answer the following. (Any one) (07)
- (1) If one person mixes 10 ml of 2% NaCl solution with 40 ml of 4% solution of KCl then find out the % of Na, K and Cl in the final solution.
 - (2) Prepare 500 ml of 10 mM solution of glucose from 9 gm% (w/v) glucose solution.
- (B) Attempt any one. (Out of two) (04)
- (1) Prepare 0.01 M, 50ml solution of glucose ($\text{C}_6\text{H}_{12}\text{O}_6$)
 - (2) Prepare 0.25 N, 100 mL solution of HCl from 1N stock solution.
- (C) Attempt any three. (Out of five) (03)
- (1) What do you understand by 1 : 1 dilution?
 - (2) How one can prepare 2gm% NaCl solution?
 - (3) Define the term: Mole.
 - (4) Define: Equivalent weight.
 - (5) What do you understand by mole fraction?
