647510 **0301112C1010** **Seat No :_____**

B.Sc. Semester - 1 (*CBCS*) Examination
Nov./Dec. -2018 (Old 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) Write the correct answer for the questions …….. (04)

(1) What is electrophilies?
(2) What is bond energy? Give its unit.
(3) Give the definition of Electro negativity.
(4) What is isotope? Give example.

(B) Write the Answer in Brief. (Any 1 out of 2) (02)

(1) Which amino acids participate in the formation of disulfide bond?
(2) How polar bond can be form in water?

(C) Write the Answer in detail. (Any 1 out of 2) (03)

(1) Explain the formation of ionic bond in sodium chloride. (with suitable diagram)
(2) Explain non polar interactions with suitable examples.

(D) Write the Short note in detail. (Any 1 out of 2) (05)

(1) Write a note on: covalent bond.
(2) Write the significance of secondary bonds in biological systems.

Que-2 (A) Write the correct answer for the questions. (04)

(1) What is standard state of system?
(2) What is system and surrounding?
(3) What is Van't Hoff plot?
(4) Define: Relative affinity of electron.

(B) Write the Answer in Brief. (Any 1 out of 2) (02)

(1) Explain ΔG with its sign and value for reaction.
(2) Draw the structure of ATP.

(C) Write the Answer in detail. (Any 1 out of 2) (03)

(1) Give the significance of thermodynamics property with example.
(2) Write about the significance of coupling reaction with suitable example.

(D) Write the Short note in detail. (Any 1 out of 2) (05)

(1) Explain the biological oxidation Process.
(2) Explain second law of thermodynamics.

Que-3 (A) Write the correct answer for the questions. (04)

(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?

(B) Write the Answer in Brief. (Any 1 out of 2) (02)

(1) Calculate the pH of 0.0005 M H_2SO_4 solution.
(2) Explain the differences between strong and weak acids/base.

(C) Write the Answer in detail. (Any 1 out of 2) (03)

(1) Write the difference between acid and base?
(2) Write a note on reference electrode used in pH meter.

(D) Write the Short note in detail. (Any 1 out of 2) (05)

(1) Derive Henderson Hasselbalch equation.

(2) Explain in detail: bicarbonate buffer.

Que-4 (A) Write the correct answer for the questions. (04)

(1) How 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?

(B) Write the Answer in Brief. (Any 1 out of 2) (02)

(1) 'Change in pH can affect the viscosity of solution'. Justify the statement.

(2) What is the effect of temperature on Physical and chemical adsorption?

(C) Write the Answer in detail. (Any 1 out of 2) (03)

(1) Calculate the osmolarity of 1 M solutions of the following: Glucose, $CaCl_2$ and $FeCl_3$.

(2) Give the application of viscometry.

(D) Write the Answer in detail. (Any 1 out of 2) (05)

(1) Discuss importance and applications of adsorption.

(2) Define Diffusion and Write importance of diffusion in living systems.

Que-5 (A) Write the correct answer for the questions. (04)

(1) Define the term: Mole.

(2) How one can prepare 2gm% NaCl solution?

(3) What do you understand by 1 : 1 dilution?

(4) Define: Equivalent weight.

(B) Write the Answer in Brief. (Any 1 out of 2) (02)

(1) Define the terms: Stock solution and Working solution.

(2) Write the formula to calculate normality and molarity of the solution.

(C) Write the Answer in detail. (Any 1 out of 2) (03)

(1) Prepare 0.01 M, 50 ml solution of glucose ($C_6H_{12}O_6$)

(2) Prepare 0.25 N, 100 mL solution of HA from 1N stock solution.

(D) Write the Short note in detail. (Any 1 out of 2) (05)

(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 final solution.

(2) Prepare 500 ml of 10 mM solution of glucose from 9 gm% (w/v) glucose solution.

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