



**HDU-003-0011014**

Seat No. \_\_\_\_\_

**B. Sc. (Sem. I) (CBCS) Examination**  
**November / December – 2017**  
**BC-101 : Physical & Chemical Aspects of**  
**Biochemistry**

**Faculty Code : 003**  
**Subject Code : 0011014**

Time :  $2\frac{1}{2}$  Hours]

[Total Marks : 70

- 1 (a) Write the correct answer for the questions : 4
- (1) Give the composition of an atom.
  - (2) What is ionic bond?
  - (3) Define: Electrophiles.
  - (4) Name the most and least electronegative atom.
- (b) Write the Answer in brief : (any 1 out of 2) 2
- (1) Comment: Oxygen can form double bonds.
  - (2) Why covalent bonds are irreversible?
- (c) Write the Answer in detail : (any 1 out of 2) 3
- (1) Illustrate the type of bond in NaCl.
  - (2) Give the importance of hydrophobic interaction.
- (d) Write the Short note in detail : (any 1 out of 2) 5
- (1) Describe resonance bond with two-three examples.
  - (2) With well labelled diagram, explain the bonds involved in tertiary structure of protein.
- 2 (a) Write the correct answer for the questions : 4
- (1) What is oxidizing agent?
  - (2) Define exothermic reaction.
  - (3) State First law of thermodynamics.
  - (4) Giving example define Extensive properties.

- (b) Write the answer in brief : (any 1 out of 2) **2**
- (1) Classify types of phosphoryl compounds giving examples.
  - (2) State second law of Thermodynamics.
- (c) Write the Answer in detail : (any 1 out of 2) **3**
- (1) Draw labelled structure of ATP.
  - (2) Define and give importance of Biological Standard free energy change.
- (d) Write the short note in detail : (any 1 out of 2) **5**
- (1) Why ATP has got high delta G?
  - (2) Give relationship between equilibrium constant and delta G.
- 3** (a) Write the correct answer for the questions : **4**
- (1) Which pH is most acidic pH 4 or pH 8 ?
  - (2) Write the examples of biological buffer.
  - (3) Define : respiratory acidosis.
  - (4) Define Arrhenius acid and base.
- (b) Write the answer in brief : (any 1 out of 2) **2**
- (1) Calculate pH of 0.005 N HCL solutions?
  - (2) When base is added to dihydrogen phosphate / hydrogen phosphate buffer system, what will happen?
- (c) Write the Answer in detail : (any 1 out of 2) **3**
- (1) Define pH and explain types of pH electrode.
  - (2) Explain conjugated acid base pair with any one example.
- (d) Write the short note in detail : (any 1 out of 2) **5**
- (1) Explain the titration curve of strong acid and strong base.
  - (2) Write the physical properties of acid and base and explain Bronsted acid base theory with any one example.

- 4 (a) Write the correct answer for the questions : 4
- (1) Define adsorption and write at least two examples of adsorbents.
  - (2) Define diffusion.
  - (3) What is reverse osmosis?
  - (4) What do you understand by osmotic pressure?
- (b) Write the Answer in brief : (any 1 out of 2) 2
- (1) Differentiate between Adsorption and Absorption.
  - (2) Can glucose diffuse through the plasma membrane? Why?
- (c) Write the Answer in detail : (any 1 out of 2) 3
- (1) How hypertonic solutions of salt or sugar can prevent microbial growth and hence are used for preservation of foods like pickles and jellies.
  - (2) Viscosity of a protein solution decreases with rise in temperature but why at particular temperature the viscosity of protein solution increases sharply?
- (d) Write the short note in detail : (any 1 out of 2) 5
- (1) Write applications of viscometry.
  - (2) Write short note on importance of diffusion in living systems.
- 5 (a) Write the correct answer for the questions : 4
- (1) Define stock solution.
  - (2) What is gram percentage solution?
  - (3) What do you understand by Molarity ?
  - (4) Give a difference between saturated and super saturated solution.
- (b) Write the answer in brief : (any 1 out of 2) 2
- (1) Define solute and solvent with one example each.
  - (2) What is dilution? Explain by giving one example.

- (c) Write the Answer in detail : (any 1 out of 2) **3**
- (1) Give characteristics of solution.
  - (2) Discuss properties of water as solvent.
- (d) Write the answer in detail : (any 1 but of 2) **5**
- (1) Define molarity and molality and prepare 0.1 M and 0.1 modal 450 ml NaOH solution?
  - (2) Define normality and equivalent weight, and give its calculation formula.
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