B. Sc. (Sem. I) (CBCS) Examination

November / December – 2016

Biochemistry

Bio. Chem. Paper - 101 : Physical & Chemical Aspects of Biochemistry

Faculty Code : 003
Subject Code : 001114

Time : $2\frac{1}{2}$ Hours]   [Total Marks : 70

Instructions : (1) Figures in the right indicates marks
(2) Write answers of all questions in main answer sheet.

1. Answer the following in brief (one mark for each question)   **[20]**
   1) Define intramolecular hydrogen bond
   2) In Calomel electrode which metal is used?
   3) Define solution?
   4) By which process carbon dioxide is taken up by plants for photosynthesis?
   5) Give any two importance of water for living organism
   6) What is pKa value?
   7) Define oxidation reaction
   8) What is redox-potential?
   9) Define pH
   10) Give physiological importance of buffer
   11) Define molarity
   12) Write the differences between adsorption and absorption?
   13) What is the effect of osmosis on movement of water?
   14) What is normal solution?
   15) Why is Viscosity Important?
   16) What is percent solution?
   17) Differentiate between stock solution and working solution
   18) Define specific gravity
   19) What is meaning of positive and negative adsorption?
   20) What is diffusion?

2   (A) Answer any three out of six   **[6]**
   1) Comment: Oxygen can form double bond
   2) What do you mean by equivalent point?
   3) Write the basic principle of pH meter

4) Why viscosity of coconut oil is higher than ground nut oil?
5) Define mass by mass percent solution and give its formula
6) What are inert elements?

(B) Answer specifically any three out of six [9]
1) Define and give the importance of hydrophobic interaction
2) How we can prepare the buffer solution?
3) What do you mean by conjugated acid?
4) Explain resonance effect with bond distance values
5) State different factors affecting the rate of solution formation
6) Describe diffusion of substances across biological membranes

(C) Write notes on any two out of five [10]
1) What do you mean by titration? Plot the titration curve of strong acid and weak base
2) Explain Arrhenius theory of acid and base
3) Write industrial and domestic importance of adsorption
4) Illustrate disulphide bond formation and give its significance
5) Explain Hemoglobin as a buffer

3 (A) Answer any three out of six [6]
1) Give two characteristic features of covalent bonds
2) What do you mean by ionic strength of acid and base
3) Define Solute and Solvent
4) Define osmosis and osmotic pressure
5) Write applications of viscometry technique
6) Why water has high boiling point compared to NH_3 or H_2S?

(B) Answer specifically any three out of six [9]
1) Give three molecules where Vanderwaal's bond play important role
2) Write the advantages of Glass electrode
3) Explain reduction reaction with one example
4) Write the Henderson Hessalbalch equation and explain common ion effect
5) Describe effect of temperature on diffusion
6) With examples, give the difference between primary and secondary bonds

(C) Write notes on any two out of five [10]
1) Write short note on hypotonic, hypertonic and isotonic solutions
2) Write the properties of water
3) Explain in detail the carbonic acid system of biological buffer
4) Calculate Molality of glucose solution when molarity is 2 M (d = 1.8 g/ml)
5) Discuss factors affecting adsorption