BC-1

NS – 297

I Semester B.Sc. Examination, November/December 2016
(F+ R) (CBCS)
(2014 – 15 and Onwards)
BIOCHEMISTRY – I

Time : 3 Hours Max. Marks : 70

Instructions : *i) This paper is for the students of the **new** syllabus : **2014 – 15**.*
*ii) The question paper has **two** Parts : Part **A** and Part **B**.*
*iii) Answer **any eight** questions from Part **A**.*
*iv) Answer **any nine** questions from Part **B**.*

PART – A

Answer **any eight** of the following questions. **Each** question carries **two** marks. **(8×2=16)**

1. State Aufbau's principle.
2. What are the types of errors in quantitative analysis ?
3. Give two differences between ionic and covalent compounds.
4. Define :
   i) Frequency
   ii) Velocity
5. What are secondary electrodes ? Give an example.
6. Calculate the oxidation number of Mn in $KMnO_4$.
7. Define :
   i) Mole fraction
   ii) Normality
8. Give two differences between sigma bond and pi-bond.
9. Mention the effect of surfactant on surface tension.
10. What are ligands ? Give an example.

P.T.O.

11. What is ionic product of water ?

12. Define binding energy.

PART – B

Answer **any nine** of the following question . **Each** question carries **six** marks. **(9×6=54)**

13. a) Explain the molecular orbital diagram for the formation of oxygen.
    b) Give an application for each i) P^{32} ii) C^{14}. **(4+2)**

14. a) What are quantum numbers ? Explain the significance of each.
    b) State Henry's law of gas solubility. **(4+2)**

15. a) Set up BORN-HABER cycle for NaCl and explain how its lattice energy is calculated.
    b) What is common ion effect ? **(4+2)**

16. a) Discuss the construction and working of glass electrode.
    b) What is Van't Hoff factor ? **(4+2)**

17. a) Explain how radioactivity is detected using scintillation counter.
    b) State Fajan's rules. **(4+2)**

18. a) State the laws of osmotic pressure.
    b) Give any two limitations of SHE. **(4+2)**

19. a) Mention any four differences between Valence Bond Theory and Molecular Orbital Theory.
    b) State Pauli's exclusion principle. **(4+2)**

20. a) What is viscosity ? How is viscosity of a given liquid determined ?
    b) Calculate the amount of sodium thiosulphate crystals required for the preparation of 250 cm^3 of N/10 solution.
    [Given : equivalent weight of $Na_2S_2O_3.5H_2O = 248$]. **(4+2)**

21. a) Derive Henderson-Hasselbalch equation for an acidic buffer.
    b) Mention any two limitations of colligative properties. **(4+2)**

22. a) What is SP^3 hybridisation ? Explain with an example.
    b) Define half life period of a radioactive element and give its mathematical expression. **(4+2)**

23. a) Define atomic orbital. Explain the shapes of S and P orbitals.
    b) What are reversible electrodes ? Give an example. **(4+2)**

24. a) What are electrochemical series ? Mention any two applications.
    b) Give the electronic configuration of the elements with atomic number 19 and 29. **(4+2)**

25. a) What is semipermeable membrane ? Explain the preparation of copper ferrocyanide semipermeable membrane.
    b) Give the Lowry-Bronsted concept of acids and bases. Mention its limitations. **(3+3)**
