

Roll No.

Total No. of Questions : 13]

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J-3720[S-1577]

[2037]

B.Sc. (BI) (Semester - 2nd)

**FUNDAMENTALS & PRINCIPLES APPLICATION OF
CHEMISTRY**

(B.Sc. (BI) - 203/201, 202)

Time : 03 Hours

Maximum Marks : 75

Instruction to Candidates:

- 1) Section - A is **compulsory**.
- 2) Attempt any **Nine** questions from Section - B.

Section - A

Q1)

(15 × 2 = 30)

- a) What do you understand by the term order of a reaction? How the order of reaction differ from molecularity of reaction?
- b) Differentiate between Galvanic cell and electrolytic cell?
- c) Comment on the statement “ The entropy of the universe is always increasing”.
- d) Give IUPAC name of the following
 - (i) $[\text{CoCl}(\text{NH}_3)_5]^{2+}$
 - (ii) $[\text{Co}(\text{NH}_3)_6]\text{Cl}_3$
- e) Give important postulates of warners co-ordination theory.
- f) What are different kind of electronic transitions possible in a molecules?
- g) Enlist various types of molecular vibrations possible in IR?
- h) What is denaturation and renaturation of proteins?
- i) What is isoelectric point?

P.T.O.

- j) What are reducing and non reducing sugars?
- k) What are Zeolites? How do they function in removing hardness of water? What are the limitations of this process?
- l) Why is Calgon conditioning better than phosphate conditioning?
- m) Write a note on stability of coordination compound in solution?
- n) Write the Zwitterion structure of glycine?
- o) How does Fructose differ from Glucose?

Section - B

(9 × 5 = 45)

- Q2)** How is e.m.f. of a cell is related to
 - (a) Free energy change
 - (b) Equilibrium constant
- Q3)** What are reference electrodes? Describe construction of calomel electrode?
- Q4)** Explain what is meant by change of entropy (ΔS) of a system. How is this related to quantity of heat q ?
- Q5)** Explain the meaning of pseudo unimolecular reaction?
- Q6)** Explain the terms BOD and COD. Indicate their significance in sewage treatment?
- Q7)** What are detergents? How does they differ from soaps? Describe various types of detergents?
- Q8)** Explain temperature dependence of EMF.
- Q9)** Write short notes on
 - (a) Galvanic cell
 - (b) Calomel electrode

- Q10)** What type of molecules exhibits vibrational-rotational spectra and why?
- Q11)** How do Raman and IR spectra of same molecules resemble and differ?
- Q12)** What are proteins? Name the products obtained by hydrolysis of proteins?
- Q13)** What are transition and inner transition elements. Give characteristics of these metals?

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