Or

10. (a) A zero order reaction can never happen in a single step. Justify the statement. 2

(b) Determine the dimension of polarizability. 2

(c) What are the characteristics of a first order reaction. 6

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UG (CBCS) EVEN SEMESTER EXAMINATION, 2024

EDUCATION
(B.Sc. B.Ed.)

4th Semester

Course No. : BSCP – 402
(General Chemistry)

Full Marks : 50
Pass Marks : 20

Time : 2 hours

The figures in the margin indicate full marks for the questions

1. (a) Complete the following reactions : 3
XeF_6 (s) + 3 H_2O (l) →
$3XeF_4$ (s) + 6 H_2O (l) →
XeF_6 (s) + H_2O (l) →

(b) What is linkage isomerism? Give example. 2

(c) Predict the structure of XeO_6^{4-} using VSEPR theory. 2

(d) Discuss the behaviour of metal d-orbital in an octahedral field. 3

Or

2. (a) Give example for each of the following 2
(i) Bidentate ligand
(ii) Chelating ligand

(b) Write a note on chirality and optical isomerism in octahedral complex. 4

(c) Discuss the Werner's theory for coordination compounds with suitable example. 4

3. (a) What are Siderophores? Give two examples and provide their structures. 5

(b) Compare the functions of haemoglobin and myoglobin. 5

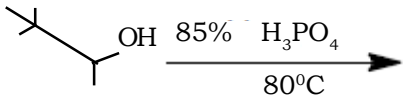
Or

4. (a) Discuss the biological role of Mg, Mn, Ca, Mo, Zn. 5

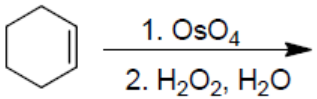
(b) Write a note on toxic effect of cyanide. 5

5. (a) Discuss a laboratory procedure for synthesizing alcohols from alkenes that avoids rearrangement. Provide the mechanism for the reaction. 4

(b) Predict the major product. Propose a mechanism for the reaction. 3

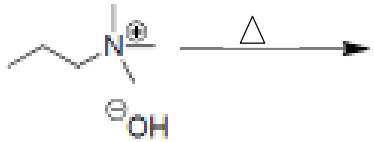


(c) Write down the product for the following reaction and provide a mechanism for the same. 3



Or

6. (a) Write down the products for following reaction and propose a mechanism for the same. 4



(b) What is Zaitsev's rule? Explain with example. 3

(c) Write down the mechanism for E1 dehydration of Cyclohexanol. 3

7. (a) What is transport number? 2

(b) How will you determine transport number by Hittorff method. 3

(c) At 18^0C the heat of solution of anhydrous $CuSO_4$ in a large volume of water is - 15800 cal/mole, while that of $CuSO_4.5H_2O$ is 2750 cal/mole. Find at 18^0C the heat of the reaction. 5

$$CuSO_4(s) + 5H_2O(l) = CuSO_4.5H_2O(s)$$

Or

8. Write two notes on any of the following: 2x5=10

(i) Hydrogen electrode

(ii) Henderson equation

(iii) Debye-Huckel theory

9. (a) Derive the mathematical equation for a first order reaction. 6

(b) The dipole moment of HCl is 1.03 debye and its bond length is 1.27A. Calculate (i) the charge on the constituent atoms and (ii) the percentage of ionic character. 2+2=4