

(i) Printed Pages : 3

Roll No.

(ii) Questions : 9

Sub. Code :

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B.A./B.Sc. (General) 5th Semester

(1129)

CHEMISTRY

(Same for B.Sc. Microbiology and Food Technology)

Paper—XVII : Inorganic Chemistry—A

Time Allowed : Three Hours]

[Maximum Marks : 22

Note :— Attempt **five** questions in all, selecting at least **one** question from each Unit. Question No. 1 is compulsory.

1. (a) Describe the bonding in $[\text{FeF}_6]^{-3}$ in terms of crystal field theory.
- (b) What is the difference between thermodynamic stability and kinetic stability ?
- (c) What is EAN rule ? Do you think $[\text{Co}(\text{NH}_3)_6]^{+3}$ obeys EAN rule ?
- (d) Give the IUPAC name of the following :
 - (i) $\text{K}[\text{PtCl}_3(\text{C}_2\text{H}_4)]$
 - (ii) $\text{Ni}(\pi\text{-C}_5\text{H}_5)_2$
- (e) Explain why most of the tetrahedral complexes are high spin complexes.
- (f) What is fractional oxygen saturation in myoglobin function ?

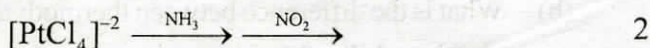
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UNIT—I

2. (a) Discuss the crystal field splitting of d -orbitals in $d^3(Td)$ and $d^7(Td)$. 2
- (b) How does the crystal field theory explain the colour of coordination compounds? 2
3. Discuss the various factors affecting the magnitude of crystal field splitting, Δ_0 . 4

UNIT—II

4. (a) How chelation increases the stability of a complex? 2
- (b) Derive the relationship between stepwise and overall stability constant. 2
5. (a) Discuss the Polarization Theory of trans effect. 2
- (b) Discuss and show stereochemistry of substitution in the following reaction :



UNIT—III

6. (a) Discuss the structure of $Fe_2(CO)_9$. 2
- (b) Complete the reactions :
- (i) $K_2PtCl_4 + C_2H_2 \rightarrow$
- (ii) $Fe(CO)_5 + NaOH \rightarrow$ 2
7. (a) How does an IR spectrum help in explaining bonding and geometries of metal-carbonyl complexes? 2
- (b) Outline the preparation of organolithium compounds. Draw the structure of methyl lithium tetramer. 2

UNIT—IV

8. Discuss in detail $\text{Na}^+ - \text{K}^+$ pump in biological systems. 4
9. (a) What do you understand by co-operativity in hemoglobin? 2
- (b) The reduction of N_2 to NH_3 is thermodynamically favourable ($\Delta G = -\text{ive}$). In biological systems, still ATP molecule is required for energy requirement. Comment. 2