

Time: 3 Hours

Marks: 80

NB: (1) Question No 1 is compulsory

(2) Attempt **any Four** questions from the remaining **SIX** questions.

1. Attempt **any Four** of the following **20**
 - (a) Differentiate between transition state and intermediate
 - (b) Write a note on optical isomerism of Tartaric acid
 - (c) Explain Geometrical isomerism of coordination number 6
 - (d) Define the terms
 - (i) specific conductance
 - (ii) equivalent conductance
 - (e) Explain the manufacture of Ammonium sulphate.
 - (f) Explain role of complexing agent in solvent extraction.

2. (a) How will you titrate strong acid with weak base without using an indicator. Explain the method in detail. **05**
 - (b) What is CFSE? Calculate CFSE OF d^3 and d^6 in octahedral complexes. **05**
 - (c) Discuss R&S system of Nomenclature. **05**
 - (d) Discuss thermodynamically and kinetically controlled reaction wrt Sulphonation of naphthalene. **05**

3. (a) Discuss the synthesis of Methyl orange with reaction. **05**
 - (b) Explain briefly the principles of solvent extractions. **05**
 - (c) Explain effect of dilution and temperature on conductance **05**
 - (d) Write the IUPAC names of the following co-ordination compounds-
 - (i) $\text{Na} [\text{Mn} (\text{CO})_5]$ (ii) $\text{Ag}[(\text{NH}_3)_2] \text{Cl}$ **05**

4. (a) Explain the role of following nutrients in plant growth-
 - (i) N (ii) P (iii) K **05**
 - (b). Explain Lanthanide separation in detail **05**
 - (c) Define stereochemistry. and differentiate between configurational and conformational stereoisomers **05**
 - (d) Explain Pinacol-pinacolone rearrangement reaction with mechanism. **05**

- 5.(a) Write short note on transport number **05**
- (b) What is EAN? Calculate EAN of $[\text{Fe}(\text{CN})_6]^{4-}$ **05**
- (c) Explain formation and stability of Carbanion **05**
- (d) Write a note on Enantiomers **05**
- 6.(a) Discuss the synthesis of Methyl orange with reaction **05**
- (b) With respect to chirality explain the following terms with examples-
- (i) plane of symmetry
- (ii) Centre of symmetry **05**
- (c). The distribution ratio of Iodine between CCl_4 and H_2O 80 in favour of CCl_4 .
50 ml of aqueous solution ($1.45 \times 10^{-3} \text{M}$) is equilibrated with 30ml portion of CCl_4 .
Calculate the amount of Iodine left unextracted for single and double extraction. **05**
- (d) Write IUPAC names of the following coordination compounds
- (i) Tetra chloro diamine Platinate (IV) (II) (II)Hexa aqua chromium (III) chloride **05**
