



**MCHT 3.1**

**III Semester M.Sc. Degree Examination, September 2016**  
**CHEMISTRY**  
**Inorganic Chemistry – III**

Time : 3 Hours

Max. Marks : 80

**Instruction :** Answer **any eight** questions from Part – I and **any four full** questions from Part – II.

**PART – I**

**(8×2=16)**

- i. What is substitution reaction of coordination compound ? Give example.
- ii. With suitable example explain the Electron transfer reaction in coordination compounds.
- iii. What is Anation Reaction ? Explain with example.
- iv. Give the differences between hapticity and denticity. Illustrate with example.
- v. Write any two reactions of organoaluminum compounds.
- vi. What are arene organometallics ? Give examples.
- vii. Write the structure and the type of bonding in Gilman reagents.
- viii. Give a brief account of olefin isomerization and its application.
- ix. Indicate the general properties associated with inorganic polymers.
- x. What are Inter halogen compounds ? Give two examples.

**PART – II**

1. a) Discuss the evidences for dissociative mechanisms.  
b) Explain the  $S_N1$  mechanism and the energy profile involved in octahedral complexes.  
c) Discuss the  $\pi$ -Bonding Theory and polarisation theory of trans-effect.  
**(4+6+6=16)**
2. d) Illustrate briefly about counting of electrons in finding metal-metal bonds in organometallic compounds.  
e) Discuss the structure of organoberyllium and organoaluminum compounds.  
f) What are cyclopentadienyl organometallics ? Discuss the structure and reactions of ferrocene.  
**(6+6+4=16)**

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3. g) Discuss the structure and bonding in Gilman reagents and explain the reactions of Gilman reagents.
- h) What is Hydroformylation reaction ? Explain the mechanism of this reaction and discuss the advantages of using [Rh] over [Co].
- i) What are fluxional molecules ? Discuss the different techniques used for studying fluxional behavior.

**(6+6+4=16)**

4. j) What are phosphazenes ? Discuss the structure phosphazenes.
- k) What are metallo carboranes ? Explain the synthesis of metallo carborane and compare the metallo carborane with metallocene.
- l) Explain the method of preparations of interhalogen compounds and discuss their structures.

**(6+4+6=16)**

5. m) Discuss factors affecting the rates of substitution reactions in square planar complexes.
- n) What are alkylidynes complexes ? Explain reactivity.
- o) Explain  $S_N1CB$  mechanism in reactions of co-ordination compounds and account for the evidence in favour of this mechanism.

**(6+4+6=16)**

6. p) What are borazines ? Explain the different methods of synthesis of borazines.
- q) Write a brief notes on :
- i) Schrock's Metathesis Catalyst and
- ii) Grubbs' Metathesis Catalyst.
- r) Discuss the preparation of cis and trans  $[Pt(NH_3)(NO_2)Cl_2]$  from  $[PtCl_4]^{2-}$ .

**(6+4+6=16)**

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