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SB-3486

M. Sc. (Sem. II) (Part-I) (Self-Finance) Examination

March / April – 2011

Inorganic Chemistry : Paper-I

Time : **3** Hours] [Total Marks : **70**

Instructions :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ **M. SC. (SEM. II) (PART-I) (SELF-FINANCE)**

Name of the Subject :

☛ **INORGANIC CHEMISTRY : PAPER-I**

☛ Subject Code No. : **3 4 8 6** ☛ Section No. (1, 2,.....) : **Nil**

Seat No. :

Student's Signature

1 Write any three from the following : **6x3=18**

(a) What is isomerism ? List the different types of isomerism present in coordination compounds. Explain the linkage and coordination isomerism in detail with suitable examples.

(b) What is valence bond theory ? Give the important features of valence bond theory. Explain the structure of $[Cu(NH_3)_4]^{2+}$ and $[CuCl_4]^{3-}$ ions by valence bond approach.

(c) What is crystal field stabilization energy ? Give the basic assumptions of crystal field theory. Explain the splitting patterns in four coordinated compounds with appropriate examples.

(d) What do you mean by stability of metal complex. Name the factors which affect the stability of complexes. How chelate effect affect the metal ligand stability in metal complexes.

(e) What is metal $-\pi$ complexes ? Which type of legends are used as $\pi-$ acid legends. Classify the carbonyl complexes of transition metals. Explain the structure of $CO_2(CO)_8$ by valence bond approach.

2 Write any three : **6x3=18**

(a) Give the discovery and scope of the crown ethers. Give the different structure of (18) crown-6 and K^+.

(b) What is cryptands ? Give the methods of synthesis of cryptands.

(c) What is supra molecular chemistry ? Explain Host-Guest chemistry. Give the classification of supra molecular host-guest compounds.

(d) What is the nature of supra molecular interactions ? Give the different types of interaction present in supra molecules. Discuss in detail any one type of interaction present in supra molecule.

(e) Give the different methods of synthesis of crown ethers.

3 Write any three answers from the following : **6x3=18**

(a) What is inorganic polymer ? Why the inorganic polymers are less observed than organic polymers ? Give the general properties of inorganic polymers.

(b) Give the synthesis properties and application of polyphosphazenes and polysilaxones inorganic polymers.

(c) Shows how collegative properties can be used of determine the molecular weight of inorganic polymer.

(d) How will you determine the degree of crystallinity ?

(e) Give the preparation of silicon fluids. Discuss the properties and application of silicon fluids.

4 Answer any four from the following : **4x4=16**

(a) Describe metal π bonding in phosphine complexes. How it differs from carbonyl bonding ?

(b) Write notes on :

(i) Hetrocrowns and

(ii) Hetrocrytands.

(c) How will you differentiate the valence bond and crystal field theory ? Give their drawbacks.

(d) Discuss the structure and bonding in $OS_3(CO)_{12}$.

(e) What are coordination polymers ? Give the preparation and properties of coordination polymers with suitable examples.

(f) Out line various characteristics of inorganic polymers.
