9. (a) Explain qualitative MO picture of osmyl complexes.

(b) Give structure of α and β $PdCl_2$. 14



Roll No. .....

(07/21-II)

# 10294

## M. Sc. EXAMINATION

(For Batch 2017 & Onwards)

(Fourth Semester)

CHEMISTRY

CHI(H)-402

Inorganic Special-V

*Time : Three Hours* *Maximum Marks :* 70

**Note :** Attempt *Five* questions in all. Q. No. **1** is compulsory and attempt *one* question from each Unit. All questions carry equal marks.

1. (a) What are metal carbonyl reactions ?

(b) Define associative reactions.

(c) What is metal carbonyl scramling ?

(d) Give ligand exchange via electron exchange reactions.

(e) What are Zirconates ? Give example.

(f) Give structure of NbO.

(g) What is molybdate reagent and its use ?

(h) Draw structure of Osmium-Penta-fluorides. 7×2=14

## Unit I

2. What are ligand substitution reactions ? Describe in detail acid hydrolysis of octahedral complexes. What are various factors affecting acid hydrolysis ? 14

3. (a) What are anation reactions ? Explain.

(b) Describe electron transfer processes by inner sphere mechanism. 14

## Unit II

4. (a) Describe *two* electron transfer reactions with an example.

(b) Explain the Marcus theory. 14



5. (a) Explain in detail stereochemically non-rigid coordination compounds.

(b) What is Cluster rotation with CO shell ? 14

## Unit III

6. (a) Give general discussion of oxidation states of Zirconium and Hafnium.

(b) Explain structure of cluster $[Nb_6X_{12}]$. 14

7. (a) Give general comparison between properties of first, second and third transition series.

(b) Give structure of $NbOCl_3$. 14

## Unit IV

8. (a) Discuss in detail trinuclear species of Mo(IV) and W(IV).

(b) Draw structure of $[ReH_9^{6-}, Re_3Cl_9]$ Unit. 14