

## M-6311

### M.Sc. (I<sup>st</sup> Semester) Examination, 2020 CHEMISTRY

#### Paper - I

#### (Inorganic Chemistry)

*Time Allowed : Three Hours*

*Maximum Marks : 70*

**Note :** Attempt all the five questions. One question from each unit is compulsory. All questions carry equal marks.

#### Unit - I

- Q. 1.** What are factors affecting stability of metal complex considering nature of metal ions ? **14**

**Or**

Write note on the following :

- (a) Bent's rule **7**  
(b) Chelate effect **7**

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**P.T.O.**

**(2)**

#### Unit - II

- Q. 2.** Discuss the ligand substitution reaction in square planar complexes. **14**

**Or**

Write note on the following :

- (a) Trans effect **7**  
(b) Marcus-Husch theory **7**

#### Unit - III

- Q. 3.** What is molecular orbital theory of co-ordination compounds ? Discuss sigma and pi-bonding in octahedral complexes. **14**

**Or**

Discuss in detail the valence bond theory to explain metal ligand bonding in co-ordination compounds. **14**

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**(3)**

**Unit - IV**

- Q. 4.** Describe the vibrational spectra of metal carbonyls for bonding and structural elucidation. **14**

**Or**

Write note on the following :

- (a) Dinitrogen Complexes **7**  
(b) Dioxygen Complexes **7**

**Unit - V**

- Q. 5.** What are isopoly acids ? Discuss the structure of isopoly acids. **14**

**Or**

Write the structure and methods of preparation of silicones. **14**

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