

Roll No. : .....

Total No. of Questions : 11 ]

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# CHEMSEM-101

M.Sc. (Ist Semester) Examination Dec., 2022

## CHEMISTRY

Paper - CC-1

### (Inorganic Chemistry-I)

Time : 3 Hours ]

[ Maximum Marks : 40

#### Section-A

(Marks : 1 × 10 = 10)

*Note* :- Answer all *ten* questions (Answer limit **50** words). Each question carries 1 mark.

#### Section-B

(Marks : 3 × 5 = 15)

*Note* :- Answer all *five* questions. Each question has internal choice (Answer limit **200** words). Each question carries **3** marks.

#### Section-C

(Marks : 5 × 3 = 15)

*Note* :- Answer any *three* questions out of five (Answer limit **500** words). Each question carries **5** marks.

#### Section-A

- (i) What is *dp-pp* bonds ?
- (ii) Give *one* example of reaction of covalently bonded molecules.

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- (iii) What is Inert Complex ?
- (iv) Give *one* example of the reaction without metal ligand bond cleavage.
- (v) What is Trans Effect ?
- (vi) Give *one* example of redox reaction.
- (vii) Write the molecular orbital configuration of  $[\text{CoF}_6]^{3-}$ .
- (viii) Give the examples of strong and weak ligand.
- (ix) What is meant by Green Synthesis ?
- (x) What is Green Chemistry Analysis ?

#### **Section-B**

2. Explain the shape of tri-atomic molecule on the basis of Walsh diagram.

*Or*

Write short note on Bent Rule.

3. Define Anation Reaction.

*Or*

Explain the conjugate base mechanism with example.

4. Discuss the mechanism of one electron transfer reactions.

*Or*

Discuss the *one* mechanism of substitution reaction in square planar complexes.

5. What is the limitations of crystal field theory ?

*Or*

Discuss *one* example of  $\pi$ -bonding in octahedral complexes.

6. Write a note on chemical and biochemical weapons.

*Or*

Write short note on safety rules and safe use of different material.

**Section-C**

7. Explain VSEPR theory with suitable examples.
8. What is Acid Hydrolysis ? Discuss the factors affecting acid hydrolysis.
9. Discuss the detail about Marcus Hush Theory.
10. Define Molecular Orbital Theory. Explain the MOT energy level diagram of  $[\text{Co}(\text{NH}_3)_6]^{3+}$  complex.
11. Discuss the twelve principles of Green Chemistry.