



M.Sc. II Semester Degree Examination, September/October - 2022
21CHE2C5L : Chemistry of Coordination Compounds

Time : 3 Hours

Maximum Marks : 70

Instruction : Answer **any five** of the following questions with question No. **1 (Q1)** is **Compulsory**,
Each question carries **equal** marks.

1. (a) Explain the important features of Valence Bond Theory with illustration of examples. **5**
- (b) Discuss various factors affecting Crystal Field Stabilization Energy (CFSE). **5**
- (c) What is John-Teller distortion in metal complexes ? Explain with example. **4**

2. (a) What is the significance of term symbols ? Explain. **5**
- (b) Write a brief note on Selection Rules. **5**
- (c) Sketch Tanabe-Sugano diagram with illustration of example. **4**

3. (a) Discuss about geometrical and optical isomerism of metal complexes. **5**
- (b) What is classical magnetism in metal complexes ? Discuss with example. **5**
- (c) Discuss the measurement of magnetic susceptibility by Gouy method. **4**

4. (a) Differentiate and derive the relation between Step-Wise and Over-all formation constants. **5**
- (b) Write a note on various factors affecting the stability of metal complexes with reference to the nature of the metal ion and ligand. **5**
- (c) How a binary formation constant is determined by polarography method ? Discuss briefly. **4**



5. (a) What is meant by Trans Effect ? Discuss its applications. 5
- (b) Discuss various substitution reactions in square planar complexes with example. 5
- (c) What are complimentary and non-complimentary electron transfer reactions ? Discuss with examples. 4
6. (a) What is spin orbit coupling ? How is it determined ? 5
- (b) Write a brief note on Nephelauxetic parameter. 5
- (c) Differentiate between ferro and ferrimagnetic materials with examples. 4
7. (a) Explain the factors affecting the stability of metal complexes. 5
- (b) Write a note on kinetic and thermodynamic stability of metal complexes. 5
- (c) How chelate and macro cyclic effects affect stability of metal complexes ? 4
8. (a) Write a short note on Racah Parameters. 5
- (b) Discuss briefly the mechanism involved in molecular rearrangements of six co-ordinated complexes. 5
- (c) Explain the Orgel diagrams for d^6 and d^8 octahedral systems. 4

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