



QP CODE: 25020353



25020353

Reg No : .....

Name : .....

**B.Sc DEGREE (CBCS) REGULAR / REAPPEARANCE / MERCY CHANCE  
EXAMINATIONS, FEBRUARY 2025  
Sixth Semester**

**CORE COURSE - CH6CRT09 - INORGANIC CHEMISTRY**

Common for B.Sc Chemistry Model I, B.Sc Chemistry Model II Industrial Chemistry & B.Sc  
Chemistry Model III Petrochemicals

2017 Admission Onwards

3E7C02EF

Time: 3 Hours

Max. Marks : 60

**Part A**

*Answer any **ten** questions.*

*Each question carries **1** mark.*

1. Write the IUPAC name of complex  $[\text{NiCl}_4]^{2-}$ .
2. What are chelates? Give an example.
3. What is primary valency?
4. Calculate CFSE for  $[\text{Co}(\text{NH}_3)_6]^{3+}$ .
5. Which among the following complexes have larger crystal field splitting? Why?  
 $[\text{Co}(\text{NH}_3)_6]^{3+}$  or  $[\text{Co}(\text{CN})_6]^{3-}$ .
6. Find the magnetic property of the complex  $[\text{Co}(\text{NH}_3)_6]^{3+}$ .
7. Which type of ligands show high trans effect?
8. Show that  $\text{Co}_4(\text{CO})_{12}$  obeys 18-electron rule.
9. Write any one reaction of Ferrocene.
10. Draw the structure of  $\text{Mn}_2(\text{CO})_{10}$ .
11. What are the major toxic effects of Mercury?
12. What is the equation for the synthesis of  $\text{XeF}_4$ ?

(10×1=10)





### Part B

Answer any **six** questions.

Each question carries **5** marks.

13. Write a note on optical isomerism in coordination complexes.
14. Find out the hybridisation, geometry and predict the magnetic property of the complex  $[\text{Mn}(\text{CN})_6]^{4-}$ .
15. Explain the application of coordination complexes in qualitative analysis.
16. Write a short note on synergic effect.
17. Write a short note on the catalytic applications of organometallic compounds.
18. What are anticancer drugs? Explain in detail.
19. Write any two methods for the preparation of diborane. Also explain the properties of diborane.
20. Explain the hybridisation and geometry of AB and  $\text{AB}_5$  type interhalogen compounds.
21. What are pseudohalogens? Describe the important characteristics of pseudohalogens.

(6×5=30)

### Part C

Answer any **two** questions.

Each question carries **10** marks.

22. (i) Explain sigma bonding of octahedral complexes using Molecular orbital theory? (ii) Draw Molecular orbital diagram for  $[\text{Co}(\text{NH}_3)_6]^{3+}$  and predict its magnetic property.
23. Describe and justify the preferred mechanism for ligand substitution reactions in square planar complexes.
24. Explain in detail, the structure and bonding in  $[\text{Re}_2\text{Cl}_8]^{2-}$ .
25. Explain the structure of haemoglobin. Comment on the cooperativity effect and Bohr effect.

(2×10=20)

