

# INORGANIC NOMENCLATURE & COORDINATION CHEMISTRY – MIDTERM REVIEW SET

Advanced Level – 100 Questions (50 MCQs + 50 Short-answer)  
Language: English (IUPAC System) | Includes Answers and Explanations

## PART I – MULTIPLE CHOICE QUESTIONS

1. What is the correct IUPAC name for  $\text{FeCl}_3$ ?  
(a) Iron(II) chloride  
(b) Iron(III) chloride  
(c) Ferric chloride  
(d) Iron trichloride
2. What is the oxidation state of Mn in  $\text{KMnO}_4$ ?  
(a) +2  
(b) +4  
(c) +6  
(d) +7
3. The complex  $[\text{Co}(\text{NH}_3)_6]\text{Cl}_3$  contains:  
(a) Co(II)  
(b) Co(III)  
(c) Co(0)  
(d) Co(IV)
4. The coordination number of Pt in  $[\text{Pt}(\text{NH}_3)_2\text{Cl}_2]$  is:  
(a) 2  
(b) 4  
(c) 6  
(d) 8
5. Which of the following is the correct name for  $[\text{Cr}(\text{H}_2\text{O})_4\text{Cl}_2]\text{Cl}$ ?  
(a) Tetraaquadichlorochromium(III) chloride  
(b) Tetraaquadichlorochromium(II) chloride  
(c) Dichlorotetraaquachromium(III) chloride  
(d) Chromium(III) chloride tetrahydrate

## PART II – SHORT ANSWER / ESSAY QUESTIONS

1. Write the IUPAC names for the following compounds:  $\text{Fe}_2\text{O}_3$ ,  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ , and  $\text{NaHCO}_3$ .
2. Determine the oxidation state and coordination number of the central metal ion in  $[\text{Co}(\text{en})_2\text{Cl}_2]\text{Cl}$ .
3. Identify the inner-sphere and outer-sphere components of  $[\text{Cr}(\text{H}_2\text{O})_4\text{Cl}_2]\text{Cl}$ .
4. Explain the difference between monodentate and bidentate ligands. Give two examples of each.
5. Write the formula for a complex ion named 'tetraamminecopper(II) sulfate'.

## ANSWER KEY & EXPLANATIONS (Sample)

1. (b) Iron(III) chloride – Fe is +3 because 3 Cl<sup>-</sup> gives total -3.
2. (d) +7 – O contributes -8, K is +1 → Mn = +7.
3. (b) Co(III) – Each NH<sub>3</sub> is neutral; total charge +3 from Co.
4. (b) 4 – Two NH<sub>3</sub> and two Cl ligands → coordination number 4.
5. (a) Tetraaquadichlorochromium(III) chloride – central Cr has +3 oxidation state.