

Q1. Give IUPAC names of the following:-

- (a) $\text{Na}_2[\text{CrF}_4\text{O}]$
- (b) $\text{K}[\text{Pt}(\text{NH}_3)\text{Cl}_3]$
- (c) $\text{Na}_2[\text{SiF}_6]$
- (d) $[\text{CoCl}(\text{en})_2(\text{ONO})]^+$
- (e) $[\text{Co}(\text{NH}_3)_3(\text{CO}_3)]\text{Cl}$
- (f) $[\text{Pt}(\text{NH}_3)_2(\text{py})_2]$ $[\text{PtCl}_4]$
- (g) $[\text{Cr}(\text{PPH}_3)(\text{CO})_5]$
- (h) $[\text{Mn}_3(\text{CO})_{12}]$
- (i) $[\text{Co}(\text{NH}_3)_6]\text{ClSO}_4$
- (j) $\text{K}_3[\text{Al}(\text{C}_2\text{O}_4)_3]$
- (k) $\text{Hg}[\text{Co}(\text{SCN})_4]$
- (l) $\text{K}_2[\text{Zn}(\text{OH})_4]$
- (m) $[\text{Co}(\text{en})_3]$ $[\text{Cr}(\text{CN})_6]$
- (n) $\text{Cs} [\text{FeCl}_4]$

Q2. Give one chemical test to distinguish between $[\text{Co}(\text{NH}_3)_5\text{Br}]\text{SO}_4$ and $[\text{Co}(\text{NH}_3)_5\text{SO}_4]\text{Br}$.

Q3. A coordination compound has formula $\text{CoCl}_3 \cdot 4\text{NH}_3$. It does not liberate ammonia but precipitates chloride ions as silver chloride. Give the IUPAC name of complex E-its structural formula.

Q4. The molar conductivity of $\text{CaCl}_2 \cdot 4\text{NH}_3 \cdot 2\text{H}_2\text{O}$ is found to be same as that of 3:1 electrolyte. What is the structural formula of the complex?

Q5. Give reasons for the following:-

- (a) $[\text{Fe}(\text{CN})_6]^{3-}$ is weakly paramagnetic while $[\text{Fe}(\text{CN})_6]^{4-}$ is diamagnetic. (VB).
- (b) $[\text{Ni}(\text{CO})_4]$ is tetrahedral while $[\text{Ni}(\text{CN})_4]$ is square planar. (VB).
- (c) $[\text{Co}(\text{CN})_6]^{3-}$ is low spin complex while $[\text{CoF}_6]^{3-}$ is a high spin complex (VB)
- (d) $[\text{Mn}(\text{H}_2\text{O})_6]^{2+}$ has five unpaired electrons while $[\text{Mn}(\text{CN})_6]^{4-}$ has only one unpaired. (CFST).
- (e) $[\text{Ti}(\text{H}_2\text{O})_6]^{3+}$ is coloured while $[\text{Sc}(\text{H}_2\text{O})_6]^{3+}$ is colorless.

Q6. A, B and C are three complexes of chromium with empirical formula $\text{H}_{12}\text{O}_6\text{Cl}_{13}\text{Cr}$. All the three complexes have Cl and H_2O molecules as the ligands. Complex A does not react with conc. H_2SO_4 . Complex B and C lose 6.75% and 13.5% of their original weight respectively on heating with Concⁿ H_2SO_4 . Identify A, B and C.

Hint: - Calculate molar mass E-wt of water lost,
Correlate it to no. of H_2O Molecules lost.