



- Write the formula of the following:
  - Diammine silver (I) cation
  - Copper hexacyanoferrate (II)
  - Potassium tetracyanonickelate(II)
  - Pentaamminechlorido platinum (IV) chloride
  - Potassium tetracyanonickelate(II)
- Write IUPAC names of the following
  - $[\text{Co}(\text{NH}_3)_4\text{Cl}_2]^+$
  - $[\text{Cr}(\text{H}_2\text{O})_5\text{Cl}]\text{Cl}_2$
  - $[\text{Ni}(\text{H}_2\text{O})_6](\text{ClO}_4)_2$
  - $[\text{Pt}(\text{NH}_3)_2\text{Cl}_4]^{2-}$
  - $\text{Na}_3[\text{Cr}(\text{OH})_2\text{F}_4]$
- Give an example of chelate complex.
- Arrange the following complexes in increasing order of electrical conductivity.  
 $\text{Co}[(\text{NH}_3)_5\text{Cl}]\text{Cl}_2$ ,  $\text{Co}[(\text{NH}_3)_6]\text{Cl}_3$ ,  $\text{Co}[(\text{NH}_3)_5\text{Cl}]\text{Cl}$ ,  $[\text{Co}(\text{NH}_3)_3\text{Cl}_3]$
- Draw the structures of geometrical isomers of the following coordination compounds.  
 $[\text{Co}(\text{NH}_3)_3\text{Cl}_3]$  and  $[\text{CoCl}_2(\text{en})_2]^+$
- Which among  $[\text{Ag}(\text{NH}_3)_2]\text{Cl}$ ,  $[\text{Ni}(\text{CN})_4]^{2-}$  and  $[\text{CuCl}_4]^{2-}$  are colourless in aqueous solution and why?
- Among the coordination complexes  $[\text{Co}(\text{en})_2(\text{ONO})\text{Cl}]$  &  $[\text{Ni}(\text{CN})_4]^{2-}$ 
  - which has square planar geometry?
  - which remains colourless in aqueous solutions and why?
- Name the type of isomerism exhibited by the following.
  - $[\text{Pt}(\text{NO}_2)(\text{H}_2\text{O})(\text{NH}_3)_2]\text{Br}$  and  $[\text{Pt}(\text{NH}_3)_2(\text{H}_2\text{O})(\text{Br})]\text{NO}_2$
  - $[\text{Cr}(\text{H}_2\text{O})_5\text{SCN}]^{2+}$  and  $[\text{Cr}(\text{H}_2\text{O})_5\text{NCS}]^{2+}$
  - $[\text{Co}(\text{NH}_3)_5(\text{NO}_2)](\text{NO}_3)_2$
- Draw the structures of the following complexes



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- a)  $[\text{Pt}(\text{NH}_3)_4][\text{NiCl}_4]$     b)  $[\text{Co}(\text{NH}_3)_4(\text{H}_2\text{O})_2]\text{Cl}_3$
10. Write the IUPAC name of the coordination isomer of the complex,  $[\text{Co}(\text{en})_3][\text{Cr}(\text{CN})_6]$ .
11. Draw the structures of the following complexes
- a)  $[\text{Pt}(\text{NH}_3)_4][\text{NiCl}_4]$                       b)  $[\text{Co}(\text{NH}_3)_4(\text{H}_2\text{O})_2]\text{Cl}_3$
- c)  $\text{Trans} [\text{Co}(\text{NH}_3)_4\text{Cl}_2]^+$               d)  $\text{cis} [\text{CrCl}_2(\text{ox})_2]^{3-}$
12. Explain how  $[\text{Pt}(\text{NH}_3)_2\text{Cl}_2]$  and  $[\text{Pt}(\text{NH}_3)_6]\text{Cl}_2$  will differ in their electrolytic conductances. Give the hybridization states of Pt in these compounds. [At no: 78]
13. Explain why a chelating complex is more stable than an unchelated complex.
14. CO is a stronger complexing agent than  $\text{NH}_3$ . Why?