INDIAN SCHOOL MUSCAT
SENIOR SECTION
DEPARTMENT OF CHEMISTRY
CLASS XII
CHAPTER -COORDINATION COMPOUNDS
WORKSHEET - 15

1. What are ambident ligands? Explain giving example.
2. Write the IUPAC name of the ionization isomer of $[Pt(NH_3)_3Br]\ Cl$
3. Write the formula of $CrCl_3.5H_2O$ that furnishes 2 moles of Chloride ions per mole of salt.
4. i) Write down the IUPAC name of the following complex :
   $[Pt(NH_3)(H_2O)Cl_2]$

   ii) Write the formula for the following complex :
   tris(ethane-1,2-diamine)chromium(III) chloride
5. Write IUPAC names of the following:
   a) $[Co\ (NH_3)_5\ Cl\ ]\ Cl_2$
   b) $[Cr(NH_3)_6]^{3+}$
6. a) What type of isomerism is shown by $[Co\ (NH_3)_5ONO]Cl_2$?
   b) On the basis of crystal field theory, write the electronic configuration for d^4 ion if $\Delta o < P$.
   c) Write the hybridization and shape of $[Fe\ (CN)_6]^{3-}$.
   (Atomic number of Fe = 26)
7. Give the formula of the compound:
   a) Nitrito – N-pentaamminecobalt(III)nitrate
   b) Potassium hexacyanocobaltate(III)
   c) Hexaammineplatinum(IV)chloride
8. Account for the following
   a) $[Fe\ (CN)_6]^{3-}$ is weakly paramagnetic while $[Fe(CN)_6]^{4-}$ is diamagnetic.
   b) $[Ni\ (CO)_4]$ is tetrahedral while $[Ni(CN)_4]^{2-}$ is square planar.
   c) $[Ti(H_2O)_6]^{3+}$ is coloured while $[Sc(H_2O)_6^{3+}$ is colourless
9. a) For the complex $[Fe(CO)_5]$, write the hybridization, magnetic character and spin of the complex. (At. Number : Fe = 26)
   b) Define crystal field splitting energy.

10. Describe the state of hybridization, the shape and magnetic behavior of the following complexes:

a) $[Cr(H_2O)_2(C_2O_4)_2]^-$

b) $[Co(NH_3)_2(en)_2]^{3+}$

(At no's: Cr = 24 , Co = 27)

11. a) What is a ligand? Give an example of a bidentate ligand.

a) Explain as to how the two complexes of nickel, $[Ni(CN)_4]^{2-}$ and $[Ni(CO)_4]$, have different structures but do not differ in their magnetic behavior. (At no: of Ni = 28)

b) Discuss the nature of bonding in metal carbonyls.

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