

Gaining Apex Coaching Centre

(Where Toppers make..... Toppers)

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TEST-I (10+2 CHEMISTRY)

Time: 1 Hrs

CHAPTER - Coordination Compounds -Assignment

- 1) Explain the following terms giving suitable examples 8
 - i) Linkage and Hydrate isomerism
 - ii) Ligand
 - iii) Crystal field splitting in an octahedral field
- 2) Explain the following cases by giving suitable reasons 8
 - i) Low spin octahedral complexes of nickel are not known
 - ii) $[\text{Ni}(\text{CN})_4]^{2-}$ is square planar or not
 - iii) CO^{2+} is easily oxidized to CO^{3+} in the presence of strong ligand
 - iv) CO is stronger ligand than NH_3 for many metals
- 7) Explain the geometry of $[\text{Co}(\text{NH}_3)_6]^{3+}$ and $[\text{Co}(\text{H}_2\text{O})_6]^{3+}$ on the basis of VB theory
- 8) Write the formulae of the compounds
 - i) tetraammineaqua cobalt (III) chloride
 - ii) Potassium tetracyanonickelate (II)
 - iii) Tris (ethane-1, 2 -diammine) chromium (III) chloride
 - iv) Iron (III) Hexacyanoferrate (II)
- 8) Write the names of following Coordination compounds
 - i) $[\text{CoCO}_3(\text{NH}_3)_5]\text{Cl}$
 - ii) $[\text{PtCl}(\text{NH}_2\text{CH}_2)(\text{NH}_3)_2]\text{Cl}$
 - iii) $\text{K}[\text{PtCl}_3(\text{NH}_3)]$
 - iv) $\text{K}_3[\text{Fe}(\text{CN})_5\text{NO}]$
- 9) $[\text{NiCl}_4]^{2-}$ is paramagnetic while $[\text{Ni}(\text{CO})_4]$ is diamagnetic though both are tetrahedral
- 10) Compare the magnetic behaviour of the complex entities $[\text{Fe}(\text{CN})_6]^{4-}$ and $[\text{FeF}_6]^{3-}$ on the basis of CFTs
- 11) Write the postulate of Werner theory
- 12) Indicate the type of isomerism shown by the following complexes and draw their structures
 $[\text{Pt}(\text{NH}_3)(\text{H}_2\text{O})\text{Cl}_2]$ $[\text{Co}(\text{NH}_3)_5(\text{NO}_2)](\text{NO}_3)_2$
- 13) $[\text{Fe}(\text{H}_2\text{O})_6]^{3+}$ is strongly paramagnetic whereas $[\text{Fe}(\text{CN})_6]^{3-}$ is weakly paramagnetic
- 14) Explain the behaviour of $[\text{Fe}(\text{CN})_6]^{4-}$ on the basis of CFT theory
- 15) $[\text{Ti}(\text{H}_2\text{O})_6]^{3+}$ is coloured while $[\text{Sc}(\text{H}_2\text{O})_6]^{3+}$ is colourless

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- 16) The hexaaquamanganese (II) ion contains five unpaired electrons while the hexacyanoion contains only one unpaired electron. Give proper justification in support of your answer (3)
- 17) How many isomers are possible for the complex $[\text{Co}(\text{en})(\text{H}_2\text{O})_2(\text{NH}_3)_2]^{3+}$. Draw the molecular structure of all the isomers and indicate that which of them is chiral (4)

