

Deg II Chem. Hons, Paper III & Deg II sub

Topic :- Coordination compound

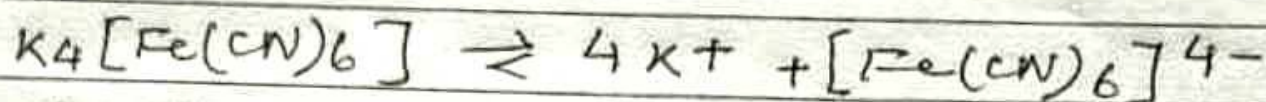
Molecular or addition compounds are stable only in solid state. They do not retain their identity when brought into the solution. They dissociate into cation and anion.

$K_2SO_4 \cdot Al_2(SO_4)_3 \cdot 24H_2O$ (Potash alum) is a double salt or addition compound because in solution it dissociates into K^+ , Al^{+++} , SO_4^{--} .

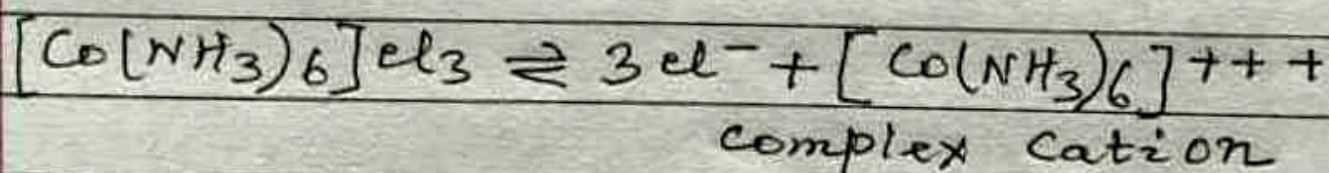
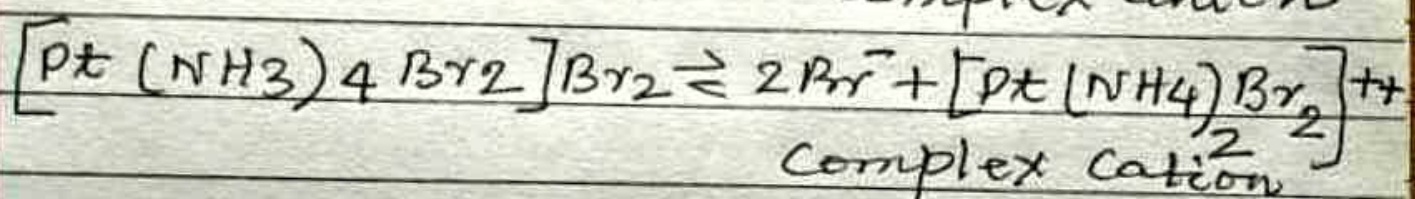
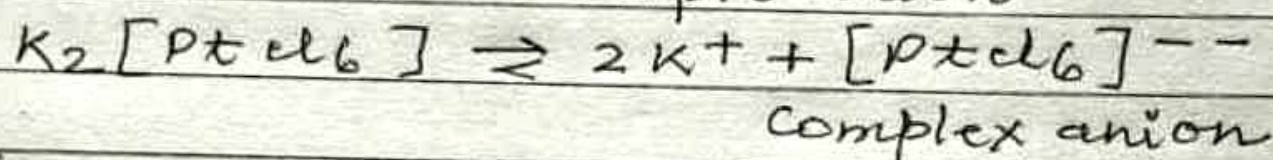
Such molecular or addition compounds which retain their identity even in solution and the properties of which are different from those of their constituents are called Co-ordination compound or Complex compound.

When solution of $Fe(CN)_2$ is mixed with KCN solution, Potassium ferrocyanide $K_4[Fe(CN)_6]$ is formed which in aqueous solution does not give test for Fe^{++} and CN^- ions but gives the test of

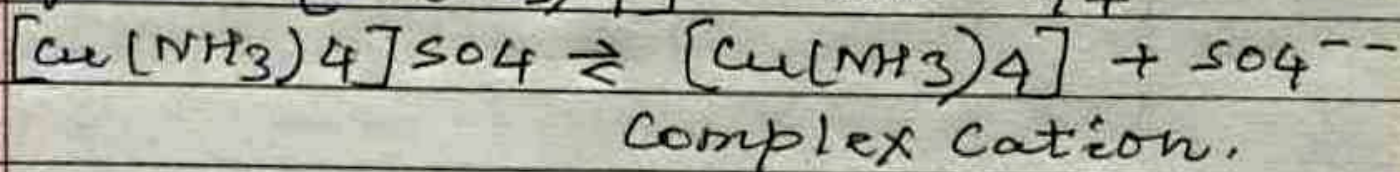
ferrocyanide ion $[\text{Fe}(\text{CN})_6]^{4-}$ and K^+ .



In the Co-ordination Compound, individual compound KCN and $\text{Fe}(\text{CN})_2$ lose their identity. A Complex Compound contain a simple cation and a complex anion or a complex cation and a simple anion.



Tetramine cupric sulphate when dissolved in water does not give the test of Cu^{++} ion but instead gives $[\text{Cu}(\text{NH}_3)_4]^{++}$ ion.



Complex ion is an electrically charged radical which is formed by the union of a metal cation with one or more neutral molecules or anions.

Ligands :-

The neutral molecules or ions generally anions which are attached with a central metal ion are called ligands.

Ions or molecules which are capable of donating a pair of electrons to the central metal ion is called a co-ordinating groups or ligands.

In ligand the particular atom which actually donates the electron pair is called the donor atom. For example in Potassium ferrocyanide complex the six CN^- ions are ligands and nitrogen in CN^- is the donor atom.

