WERNER'S CO-ORDINATION THEORY

Alfred Werner in 1893 Put forwarded his famous theory of Co-ordination to explain the formation of Complex Compounds. He was awarded Noble Prize in Chemistry for his work in Co-ordination Chemistry.

Following are the main Postulates of Werners theory: -

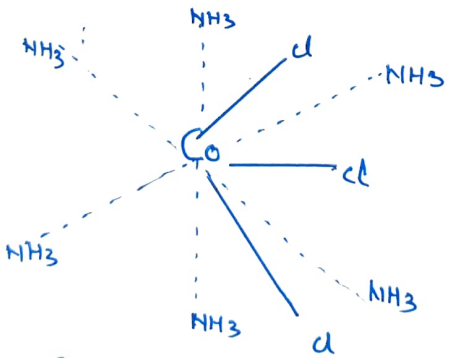
(i) Metal posses two type of Valencies.
   (a) Principal or Primary or Ionisable Valency
   (b) Secondary or Non ionisable or Auxiliary Valency

(ii) Primary Valencies are those valencies by which a metal exercises in the formation of its Simple Salt.
The Primary Valencies of Pt, Co, Cu, and Ag in formation of their Simple Salt eg $PtCl_4$, $CoCl_3$, $CuSO_4$, and AgCl are 4, 3, 2 & 1 respectively

(iii) Secondary Valencies are those by which a metal Cation exercises towards a neutral molecule or an anion in the formation of its Complex Ion.
The Secondary Valencies is also termed as Co-ordination numbers of the metal Cation under Consideration.

(iv) Primary Valencies are satisfied by negative ions, where as secondary Valencies may be satisfied either by negative group or Neutral molecules and Some times even by Positive groups.

(v) Secondary Valencies are directed in Space and hence Such Compounds are Capable of exibiting the Phenomenon of Isomerism.
On the basis of this theory Warner assigned the following structural formula for $CoCl_3 6NH_3$



In the formula, Six ammonia molecules are attached to Cobalt by Secondary Valencies where as three Cl-atoms are bonded with Cobalt by Primary Valencies.
Primary Valencies are designed by Solid lines and secondary Valencies are designed by doted lines.