DPP – 2

SOLUTION

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1. Primary valency refers to the valency of the core metal atom or ion that is satisfied by the anion. The anions are separated from the core metal atom or ion in an aqueous solution.
The secondary valency is the number of positive or negative ions or neutral molecules coordinated to the core metal atom.
$[Co(NH_3)_5Cl]Cl_2$
Two Cl show (PV) and one Cl (PV) as well as (SV)

2. Coordination compound dissociates in its solution to give ions. Neutral complexes do not give ions.

3. Greater the number of ions, greater the conductance.
(A) $K_2[PtCl_6] \rightleftharpoons \underbrace{2\,K^+ + [PtCl_6]^{2-}}_{\text{three ion}}$
(B) $PtCl_4 \cdot 2NH_3 \rightleftharpoons [Pt(NH_3)_2Cl_4] \rightarrow$ no ion (least).
(C) $[Pt(NH_3)_3Cl_3]Cl \rightleftharpoons$ two ions.
(D) $[Pt(NH_3)_5Cl_C Cl_3 \rightleftharpoons$ four ions (maximum)

4. In $K_3[Fe(CN)_6]$, all Fe ions are inside the complex which on ionisation in aqueous solution does not give Fe ions. So it does not give chemical test for iron.

5. Primary valency corresponds to the oxidation state of metal. Thus, in the given binary compounds CrCl3, CoCl2 and PdCl2, the primary valencies are 3, 2 and 2 respectively.

6. All the points corresponds to the Werner Theory.

7.

(P)	$[Co(NH_3)_6]Cl_3$ (Yellow)	**(3)**	1: 3 electrolyte
(Q)	$[CoCl(NH_3)_5]Cl_2$ (Purple)	**(2)**	1: 2 electrolyte
(R)	$[CoCl_2(NH_3)_4]Cl$ (Green)	**(1)**	1: 1 electrolyte
(S)	$[PtCl_2(NH_3)_2]$ (Deep Yellow)	**(4)**	0: 0 electrolyte

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8. $[Pd(NH_3)_4]Cl_2 \longrightarrow$ 2 moles AgCl

$[Ni(H_2O)_6]Cl_2 \longrightarrow$ 2 moles AgCl

$[PtCl_4]2HCl \longrightarrow$ 0 moles AgCl

$[Co(NH_3)_4Cl_2]Cl \longrightarrow$ 1 moles AgCl

9. Correct statement are:

(I) Both double salts as well as complexes are formed by the combination of two or more stable compounds in stoichiometric ratio

(II) double salts such as carnallite, $KCl \cdot MgCl_2 \cdot 6H_2O$, potash alum, $KAl(SO_4)_2 \cdot 12H_2O$, etc. dissociate into simple ions completely when dissolved in water

(III) complex ions such as $[Fe(CN)_6]^{4-}$ of $K_4Fe(CN)_6$, do not dissociate into Fe^{2+} and CN ions

10. Secondary Valency six passible for: -

$PdCl_2 \cdot 4NH_3 \rightarrow \underset{S.V. = 6}{[Pd(NH_3)_4Cl_2]}$

$NiCl_2 \cdot 6H_2O \rightarrow \underset{S.V. = 6}{[Ni(H_2O)_6]Cl_2}$

$PtCl_4 \cdot 2HCl \rightarrow \underset{S.V. = 4}{[PtCl_4].2HCl}$

$CoCl_3 \cdot 4NH_3 \rightarrow \underset{S.V. = 6}{[CO(NH_3)_4Cl_2]Cl}$

$PtCl_2 \cdot 2NH_3 \rightarrow \underset{S.V. = 4}{[Pd(NH_3)_4Cl_2]}$