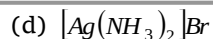
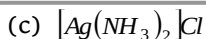


Co-ordination Chemistry

Self Evaluation Test -20

- An, example for a double salt is [KCET 2002]
 - Potassium ferricyanide
 - Cobalt hexamine chloride
 - Cuprous sulphate
 - Mohr's salt
- The complex $[Pt(NH_3)_6]Cl_4$ furnishes [MP PET 1995]
 - 5 ions
 - 4 ions
 - 3 ions
 - 2 ions
- How many isomers are possible in $[Co(en)_2Cl_2]$ [Orissa JEE 2004]
 - 2
 - 4
 - 6
 - 1
- π -bonding is not present in [MP PET 2003]
 - Grignard reagent
 - Dibenzene chromium
 - Zeise's salt
 - Ferrocene
- Grignard reagent is a
 - Coordinate compound
 - Double salt
 - Organometallic compound
 - None of these
- Which one of the following complexes is paramagnetic [RPMT 1997]
 - $[Co(F)_6]^{3+}$
 - $[Co(H_2O)_6]^{3+}$
 - $[CoF_3(H_2O)_3]$
 - All of these
- The oxidation state of Fe in the complex $[Fe(CO)_5]$ is [MP PMT 2003]
 - 1
 - +2
 - +4
 - Zero
- Which of the following is non-ionizable
 - $[Co(NH_3)_3Cl_3]$
 - $[Co(NH_3)_4Cl_2]Cl$
 - $[Co(NH_3)_5Cl]Cl_2$
 - $[Co(NH_3)_6]Cl_2$
- The coordination and oxidation number of X in the compound $[X(SO_4)(NH_3)_5]Cl$ will be [JIPMER 1997; DCE 2004]
 - 6 and 4
 - 10 and 3
 - 2 and 6
 - 6 and 3
- In $[NiCl_4]^{2-}$, the number of unpaired electron is [BHU 2003]
 - 4.5
 - 2
 - 3
 - 4
- $AgCl$ precipitate dissolves in ammonia due to the formation of [AIIMS 1991; MP PET 1993; CBSE PMT 1998]
 - $[Ag(NH_4)_2]OH$
 - $[Ag(NH_4)_2]Cl$
 - $[Ag(NH_3)_2]OH$
 - $[Ag(NH_3)_2]Cl$
- The oxidation number of cobalt in $K[Co(CO)_4]$ is [MP PMT 2001; J & K CET 2005]
 - +1
 - 1
 - +3
 - 3
- The complex salt can be made by the combination of $[Co^{III}(NH_3)_5Cl]^x$ with: [Pb. CET 2001]
 - PO_4^{3-}
 - Cl^-
 - $2Cl^-$
 - $2K^+$
- Which one of the following is an inner orbital complex as well as diamagnetic in behaviour (Atomic number : Zn = 30), Cr = 24, Co = 27, Ni = 28) [CBSE PMT 2005]
 - $[Zn(NH_3)_6]^{2+}$
 - $[Cr(NH_3)_6]^{3+}$
 - $[Co(NH_3)_6]^{3+}$
 - $[Ni(NH_3)_6]^{2+}$
- The oxidation state of Fe in $K_4[Fe(CN)_6]$ is [Pb. CET 2003; MP PET 2002]
 - +2
 - 2
 - +3
 - +4
- The number of moles of $AgCl$ precipitate when excess of $AgNO_3$ is added to one mole of $[Cr(NH_3)_4Cl_2]Cl$ is [EAMCET 1998]
 - Zero
 - 1.0
 - 2.0
 - 3.0
- An anion solution gives a white ppt. With $AgNO_3$ solution. The ppt. dissolves in dil. ammonia due to the formation of [MP PMT 1997]
 - $AgNO_3$
 - NH_4NO_3



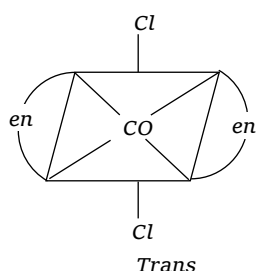
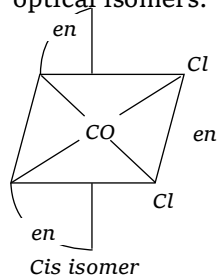
18. The diamagnetic specie is [AIIMS 2005]



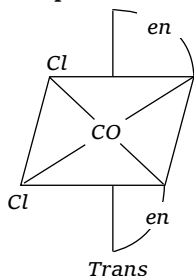
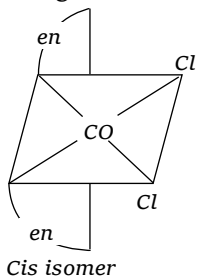
Answers and Solutions

(SET -20)

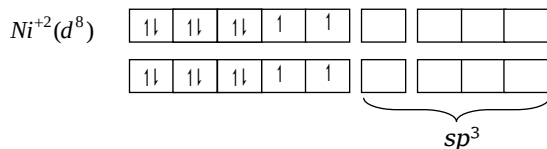
1. (d) Mohr's salt ($FeSO_4 \cdot (NH_4)_2SO_4 \cdot 6H_2O$) is a double salt.
2. (a) $[Pt.(NH_3)_6]Cl_4 \rightleftharpoons [Pt.(NH_3)_6]^{4+} + 4Cl^-$ (5 ions).
3. (b) $[Co(en)_2Cl_2]$ has 2 geometrical isomers & 2 optical isomers.



Again Cis isomer can give 2 optical isomers.



4. (a) Grignard reagent is, $R-Mg-X$.
5. (c) The organometallic compound of Mg is known as Grignard reagent ($R-Mg-X$).
6. (d) As all the ligands are weak so they do to induce pairing of electrons so they show paramagnetism.
7. (d) In $[Fe(CO)_5]$, $x + 5(0) = 0$, so oxidation number of Fe is zero.
8. (a) Atoms present with in co-ordination sphere do not ionise.
9. (d) Co-ordination no. is 6
oxidation state in $[X(SO_4)(NH_3)_5]Cl$ is
 $x - 2 + 0 - 1 = 0$, $x = +3$.
10. (b) $[NiCl_4]^{2-}$

O.N. of $Ni = +2$ 

Which has two unpaired electrons that is why it is paramagnetic.

11. (d) $AgCl + NH_3 \rightarrow [Ag(NH_3)_2]Cl$
Diammine silver (I) chloride ***
12. (b) $1 \times (+1) + x + 4 \times (0) = 0$
 $1 + x = 0 \Rightarrow x = -1$ Oxidation number of $Co = -1$.
13. (c) In the complex ion $[Co^{(III)}(NH_3)_5Cl]^x$, charge on the complex ion
 $x = 3 + (0 \times 5) + (-1)$
 $x = 3 - 1 = 2$
Hence, it will combine with that species which have -2 charge to produce a neutral complex salt. So it will combine with $2Cl^-$ to produce $[Co(NH_3)_5Cl]Cl_2$ complex.
14. (c) $[Co(NH_3)_6]^{3+}$
O. N. of $Co = +3$
 $Co^{3+}(d^6)$

$\uparrow\downarrow$	$\uparrow$	$\uparrow$	$\uparrow$	$\uparrow$				
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 $[Co(NH_3)_6]^{3+}$

$\uparrow\downarrow$	$\uparrow\downarrow$	$\uparrow\downarrow$						
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 d^2sp^3 (Inner)
- Due to paired e^- it is diamagnetic.
15. (a) $4 \times (+1) + x + 6 \times (-1) = 0$
or $x = +6 - 4 = +2$
Oxidation state of $Fe = +2$
16. (b) In this complex chloride ion in the form of ionic isomerism and show primary valency.
 $AgNO_3$ is added in excess then result precipitation will occur.
17. (c) $AgNO_3 + Cl^- \rightarrow AgCl + NO_3^-$
 $AgCl + 2NH_3 \rightarrow [Ag(NH_3)_2]Cl$
diammine silver (I) chloride.
18. (a) $[Ni(CN)_4]^{2-}$

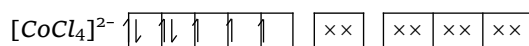
$\uparrow\downarrow$	$\uparrow\downarrow$	$\uparrow\downarrow$	$\times\times$	$\times\times$	$\times\times$	$\times\times$
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diamagnetic

932 Co-ordination Chemistry



paramagneti



paramagneti

