

CLASS : XII d & f block & coordination compound

TIME : 40 Min.

M.M. 15

SET ---1

1. For the complex $[NiCl_4]^{2-}$, write (i) the IUPAC name.
(ii) the hybridization type. (iii) the shape of the complex. (3)
2. What is meant by crystal field splitting energy? On the basis of crystal field theory, write the electronic configuration of d^4 in terms of t_{2g} and e_g in an octahedral field
when $\Delta_0 \geq P$ (ii) $\Delta^o \leq P$ (3)
3. Give reason for the following:
 - (i) Mn^{3+} is a good oxidising agent.
 - (ii) $E^0_{M2+/M}$ values are not regular for first row transition metals (3d series)
 - (iii) Although "F" is more electronegative than "O" the highest Mn fluoride is MnF_4 , whereas the highest oxide is Mn_2O_7 . (3)
4. Complete the following equations: (2)
 - (a) $2CrO_4^{2-} + 2H^+ \rightarrow$
 - (b) $KMnO_4 \xrightarrow{\Delta} \rightarrow$
5. (a) Why do transition elements show variable oxidation states?
(b) Name the element showing maximum number of oxidation state in first transition series.
(c) Name the element which shows only +3 oxidation state.
(d) What is lanthanoid contraction? (4)