

An aqueous pink solution of cobalt(II) chloride changes to deep blue on addition of excess of HCl. This is because_____.

- (i) $[\text{Co}(\text{H}_2\text{O})_6]^{2+}$ is transformed into $[\text{CoCl}_6]^{4-}$
- (ii) $[\text{Co}(\text{H}_2\text{O})_6]^{2+}$ is transformed into $[\text{CoCl}_4]^{2-}$
- (iii) tetrahedral complexes have smaller crystal field splitting than octahedral complexes.
- (iv) tetrahedral complexes have larger crystal field splitting than octahedral complex.

Ans : ii and iii

Reason : $\frac{4}{9}\text{CFSE}(\text{octahedral}) = \text{CFSE}(\text{tetrahedral})$