

Atomic Energy Central School, Indore

Class XII Chemistry CO-ORDINATION COMPOUNDS

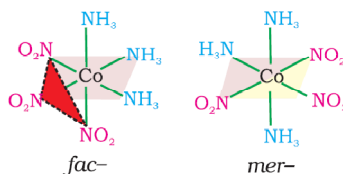
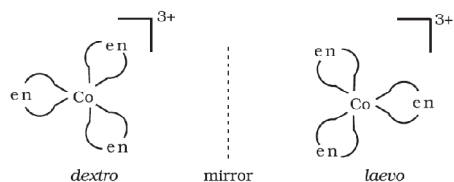
Worksheet 3/6

Questions

- Why is geometrical isomerism not possible in tetrahedral complexes having two different types of unidentate ligands coordinated with the central metal ion ?
- The pair $[\text{Co}(\text{NH}_3)_4\text{Cl}_2]\text{Br}_2$ and $[\text{Co}(\text{NH}_3)_4\text{Br}_2]\text{Cl}_2$ will show (choose one correct option)
 a) Linkage Isomerism b) Hydrate Isomerism c) Ionisation Isomerism d) Coordinate Isomerism
- What type of isomerism is shown by the complex $[\text{Co}(\text{NH}_3)_5(\text{SCN})]^{2+}$?
- What type of isomerisation is exhibited by the complex $[\text{Co}(\text{en})_3]^{3+}$ and $[\text{Co}(\text{NH}_3)_3(\text{NO}_2)_3]$? Draw the isomers.
- Indicate the types of isomerism exhibited by the following complexes:
 (i) $[\text{Cr}(\text{H}_2\text{O})_2(\text{C}_2\text{O}_4)_2]$ (ii) $[\text{Co}(\text{en})_3]\text{Cl}_3$
 (iii) $[\text{Pt}(\text{NH}_3)(\text{H}_2\text{O})\text{Cl}_2]$ (iv) $[\text{Co}(\text{NH}_3)_5(\text{NO}_2)](\text{NO}_3)_2$

Answers

- Tetrahedral complexes do not show geometrical isomerism because the relative positions of the unidentate ligands attached to the central metal atom are the same with respect to each other.
- c) Ionisation Isomerism
- Linkage Isomerism
- $[\text{Co}(\text{en})_3]^{3+}$ - Optical Isomerism $[\text{Co}(\text{NH}_3)_3(\text{NO}_2)_3]$ – Geometrical Isomerism



- (i) Stereoisomerism (both geometrical and optical) (ii) optical isomerism
 (iii) Stereoisomerism (both geometrical and optical) (iv) Linkage Isomerism