

Coordination Compounds

1. Fac-mer isomerism is associated with which one of the following complexes?

- (a) $[M(AA)_2]$
- (b) $[MA_3B_3]$
- (c) $[M(AA)_3]$
- (d) $[MA_4B_2]$

Answer: (b) $[MA_3B_3]$

2. The complex ions $[Co(NH_3)_5(NO_2)]^{2+}$ and $[Co(NH_3)_5(ONO)]^{2+}$ are called

- (a) Ionization isomers
- (b) Linkage isomers
- (c) Co-ordination isomers
- (d) Geometrical isomers

Answer: (b) Linkage isomers

3. Which type of isomerism is shown by the complex compounds $[Co(NH_3)_5Br]SO_4$ and

$[Co(NH_3)_5SO_4]Br$

- (a) Ionisation
- (b) Optical
- (c) Linkage
- (d) Coordination

Answer: (a) Ionisation

4. The diamagnetic species is

- (a) $[Ni(CN)_4]^{2-}$
- (b) $[NiCl_4]^{2-}$
- (c) $[CuCl_4]^{2-}$
- (d) $[CoF_6]^{3-}$

Answer:(b) $[\text{NiCl}_4]^{2-}$

5.Primary and secondary valence of Pt in $[\text{Pt}(\text{en})_2\text{Cl}_2]$ are

(a) 4, 4

(b) 4, 6

(c) 6, 4

(d) 2, 6

Answer:(d) 2, 6

6.IUPAC name of $[\text{Pt}(\text{NH}_3)_3\text{Br}(\text{NO}_2)\text{Cl}]\text{Cl}$ is

(a) triamminechlorodibromidoplatinum (IV) chloride

(b) triamminechloridobromidonitrochloride-platinum (IV) chloride

(c) triamminebromidochloridonitroplatinum (IV) chloride

(d) triamminenitrochlorobromoplatinum (IV) chloride

Answer:(c) triamminebromidochloridonitroplatinum (IV) chloride

7.Which of the following has square planar structure?

(a) $[\text{NiCl}_4]^{2-}$

(b) $[\text{Ni}(\text{CO})_4]$

(c) $[\text{Ni}(\text{CN})_4]^{2-}$

(d) None of these

Answer:(c) $[\text{Ni}(\text{CN})_4]^{2-}$

8.The geometry and magnetic behaviour of the complex $[\text{Ni}(\text{CO})_4]$ are

(a) Square planar and paramagnetic

(b) Tetrahedral and diamagnetic

(c) Square planar and diamagnetic

(d) Tetrahedral and paramagnetic

Answer:(b) Tetrahedral and diamagnetic

9.The IUPAC name of complex ion $[\text{Fe}(\text{CN})_6]^{3-}$ is

- (a) Hexacyanidoiron(III)ion
- (b) Hexacyanato ferrate (III)ion
- (c) Hexacyanidoferrate (III)ion
- (d) Tricyanoiron(III)ion

Answer: (c) Hexacyanidoferrate (III)ion

10. Which of the following is a hexadentate ligand?

- (a) EDTA⁴⁻
- (b) (COO)²⁻
- (c) en
- (d) NH₃

Answer: (a) EDTA⁴⁻

11. Mohr's salt is

- (a) Fe₂(SO₄)₃.(NH₄)₂SO₄.6H₂O
- (b) FeSO₄.(NH₄)₂.SO₄.6H₂O
- (c) MgSO₄.7H₂O
- (d) FeSO₄.7H₂O

Answer: (b) FeSO₄.(NH₄)₂.SO₄.6H₂O

12. According to Werner's theory of coordination compounds

- (a) Primary valence is ionisable
- (b) Secondary valence is ionisable
- (c) Primary and secondary valencies are ionisable
- (d) Neither primary nor secondary valence is ionisable

Answer: (a) Primary valence is ionisable

13. Which one of the following is an outer orbital complex and exhibits paramagnetic behaviour :

- (a) [Cr(NH₃)₆]³⁺
- (b) [Co(NH₃)₆]³⁺

(c) $[\text{Ni}(\text{NH}_3)_6]^{2+}$

(d) $[\text{Zn}(\text{NH}_3)_6]^{2+}$

Answer:(c) $[\text{Ni}(\text{NH}_3)_6]^{2+}$

14.The oxidation state of nickel in $[\text{Ni}(\text{CO})_4]$ is

(a) 0

(b) 1

(c) 2

(d) 3

Answer:(a) 0

15.The ligand $(\text{NH}_2\text{CH}_2\text{CH}_2\text{NH}_2)$ is

(a) bidentate

(b) tridentate

(c) tetradentate

(d) pentadentate

Answer:(a) bidentate