

CO-ORDINATION COMPOUND

1. The oxidation number of Fe in $[\text{Fe}(\text{CN})_6]^{4-}$ is:

- A) +2
 - B) +3
 - C) 0
 - D) -2
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2. The coordination number of Ni in $[\text{Ni}(\text{CO})_4]$ is:

- A) 2
 - B) 4
 - C) 6
 - D) 8
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3. The IUPAC name of $[\text{Cr}(\text{NH}_3)_4\text{Cl}_2]\text{Cl}$ is:

- A) Tetraamminedichlorochromium(III) chloride
 - B) Dichlorotetraamminechromium(III) chloride
 - C) Tetraamminedichlorochromium(II) chloride
 - D) Dichlorotetraamminechromium(II) chloride
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4. The complex $[\text{Pt}(\text{NH}_3)_2\text{Cl}_2]$ can show:

- A) Geometrical isomerism only
 - B) Optical isomerism only
 - C) Both
 - D) None
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5. Which of the following is a bidentate ligand?

- A) NH_3
 - B) Cl^-
 - C) Ethylenediamine (en)
 - D) CN^-
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6. The total number of ions produced on dissociation of $[\text{Co}(\text{NH}_3)_6]\text{Cl}_3$ is:

- A) 1
 - B) 2
 - C) 3
 - D) 4
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7. Which of the following exhibits linkage isomerism?

- A) $[\text{Co}(\text{NH}_3)_6]\text{Cl}_3$
 - B) $[\text{Co}(\text{NH}_3)_5(\text{NO}_2)]\text{Cl}_2$
 - C) $[\text{Ni}(\text{en})_3]^{2+}$
 - D) $[\text{Fe}(\text{CN})_6]^{3-}$
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8. Which type of hybridization is present in $[\text{Ni}(\text{CN})_4]^{2-}$?

- A) sp^3
 - B) dsp^2
 - C) sp^2
 - D) d^2sp^3
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9. The magnetic moment of $[\text{Fe}(\text{H}_2\text{O})_6]^{2+}$ is approximately:

- A) 0 BM
 - B) 2.83 BM
 - C) 4.90 BM
 - D) 5.92 BM
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10. Which complex can exhibit optical isomerism?

- A) $[\text{Cr}(\text{H}_2\text{O})_6]^{3+}$
 - B) $[\text{Co}(\text{en})_3]^{3+}$
 - C) $[\text{Pt}(\text{NH}_3)_4]^{2+}$
 - D) $[\text{Ni}(\text{CN})_4]^{2-}$
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11. In the complex $[\text{Fe}(\text{CO})_5]$, the oxidation number of Fe is:

- A) 0
 - B) +1
 - C) +2
 - D) -1
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12. Which of the following shows ionization isomerism?

- A) $[\text{Co}(\text{NH}_3)_5\text{SO}_4]\text{Br}$
 - B) $[\text{Co}(\text{NH}_3)_6]\text{Cl}_3$
 - C) $[\text{Fe}(\text{CN})_6]^{3-}$
 - D) $[\text{Ni}(\text{CO})_4]$
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13. Which ligand can show ambidentate behavior?

- A) CN^-
- B) NH_3
- C) Cl^-
- D) H_2O

14. The number of unpaired electrons in $[\text{Fe}(\text{CN})_6]^{3-}$ is:

- A) 5
 - B) 3
 - C) 1
 - D) 0
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15. The geometry of $[\text{Ni}(\text{CN})_4]^{2-}$ is:

- A) Tetrahedral
 - B) Square planar
 - C) Octahedral
 - D) Trigonal bipyramidal
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16. Which of the following is a neutral ligand?

- A) CN^-
 - B) NO_3^-
 - C) CO
 - D) SO_4^{2-}
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17. Which complex shows geometrical isomerism?

- A) $[\text{Cr}(\text{NH}_3)_6]^{3+}$
 - B) $[\text{Co}(\text{en})_3]^{3+}$
 - C) $[\text{Pt}(\text{NH}_3)_2\text{Cl}_2]$
 - D) $[\text{Ni}(\text{CN})_4]^{2-}$
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18. The complex that forms an inner orbital (low-spin) complex is:

- A) $[\text{FeF}_6]^{3-}$
 - B) $[\text{Fe}(\text{CN})_6]^{3-}$
 - C) $[\text{Mn}(\text{H}_2\text{O})_6]^{2+}$
 - D) $[\text{CoCl}_4]^{2-}$
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19. The color of $[\text{Ti}(\text{H}_2\text{O})_6]^{3+}$ is due to:

- A) Charge transfer
 - B) d-d transition
 - C) s-p transition
 - D) p-d transition
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20. Which of the following complexes is diamagnetic?

- A) $[\text{Ni}(\text{CN})_4]^{2-}$
- B) $[\text{NiCl}_4]^{2-}$

- C) $[\text{Fe}(\text{H}_2\text{O})_6]^{3+}$ + $[\text{Fe}(\text{H}_2\text{O})_6]^{3+}$ + $[\text{Fe}(\text{H}_2\text{O})_6]^{3+}$
 D) $[\text{Mn}(\text{H}_2\text{O})_6]^{2+}$ + $[\text{Mn}(\text{H}_2\text{O})_6]^{2+}$ + $[\text{Mn}(\text{H}_2\text{O})_6]^{2+}$

✓ Answers – Coordination Compounds MCQs

1. **A)** +2
 2. **B)** 4
 3. **A)** Tetraamminedichlorochromium(III) chloride
 4. **A)** Geometrical isomerism only
 5. **C)** Ethylenediamine (en)
 6. **D)** 4
 7. **B)** $[\text{Co}(\text{NH}_3)_5(\text{NO}_2)]\text{Cl}_2$ + $[\text{Co}(\text{NH}_3)_5(\text{NO}_2)]\text{Cl}_2$ + $[\text{Co}(\text{NH}_3)_5(\text{NO}_2)]\text{Cl}_2$
 8. **B)** dsp^2
 9. **C)** 4.90 BM
 10. **B)** $[\text{Co}(\text{en})_3]^{3+}$ + $[\text{Co}(\text{en})_3]^{3+}$ + $[\text{Co}(\text{en})_3]^{3+}$
 11. **A)** 0
 12. **A)** $[\text{Co}(\text{NH}_3)_5\text{SO}_4]\text{Br}$ + $[\text{Co}(\text{NH}_3)_5\text{SO}_4]\text{Br}$ + $[\text{Co}(\text{NH}_3)_5\text{SO}_4]\text{Br}$
 13. **A)** CN^-
 14. **C)** 1
 15. **B)** Square planar
 16. **C)** CO
 17. **C)** $[\text{Pt}(\text{NH}_3)_2\text{Cl}_2]$ + $[\text{Pt}(\text{NH}_3)_2\text{Cl}_2]$ + $[\text{Pt}(\text{NH}_3)_2\text{Cl}_2]$
 18. **B)** $[\text{Fe}(\text{CN})_6]^{3-}$ + $[\text{Fe}(\text{CN})_6]^{3-}$ + $[\text{Fe}(\text{CN})_6]^{3-}$
 19. **B)** d–d transition
 20. **A)** $[\text{Ni}(\text{CN})_4]^{2-}$ + $[\text{Ni}(\text{CN})_4]^{2-}$ + $[\text{Ni}(\text{CN})_4]^{2-}$
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