# CHEMISTRY

# NCERT - FULL MARKS CHEMISTRY(TAMIL)

# COORDINATION COMPOUNDS AND BIO-COORDINATION COMPOUNDS

## Self Evaluation A Choose The Correct Answer

**1.** Which is a double salt ?

A. $K_2SO_4.\ AI_2(SO_4)_{4.24}H_2O$

B. NaCl

C. $K_4\left[Fe(CN)_6\right]$

D. KCl

**Answer:**

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**2.** An example of complex compound having coordination number 4

A. $K_4\left[Fe(CN)_6\right]$

B. $\left[Co(en)_4\right]CI_3$

C. $\left[Fe(H_2O)_6\right]CI_3$

D. $\left[Cu(NH_3)_4\right]CI_2$

**Answer:**

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**3.** The geometry of $\left[Cu(NH_3)_4\right]^{2+}$ complex ion

A. Linear

B. Tetrahedral

C. Square planar

D. Angular

**Answer:**

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**4.** An example of a chelating ligand is

A. $NO_2^-$

B. Chloro

C. Bromo

D. en

**Answer:**

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**5.** The geometry of complex ion $\left[Fe(CN)_6\right]^{4-}$ is

A. tetrahedral

B. square planar

C. Octahedral

D. triangular

**Answer:**

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**6.** The oxidation number of nickel in the complex ion $[NiCl_4]^{2-}$ is

A. $+1$

B. $-1$

C. $+2$

D. $-2$

**Answer:**

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**7.** Which is not an anionic complex?

A. $\left[Cu(NH_3)_4\right]CI_2$

B. $K_4\left[Fe(CN)_6\right]$

C. $K_3\left[Fe(CN)_6\right]$

D. $[NiCI_4]^{2-}$

**Answer:**

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**8.** The geometry of $\left[Ni(CN)_4\right]^{2-}$ is

A. Tetrahedral

B. Square planar

C. Triangular

D. Octahedral

**Answer:**

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**9.** An example of an ambidentate ligand is

A. $CN^-$

B. $CI^-$

C. $NO_2^-$

D. $I^-$

**Answer:**

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**10.** $[FeF_6]^{4-}$ Paramagnetic because

A. $F^-$ is a weaker ligand

B. $F^-$ is a strong ligand

C. $F^-$ is a flexidentate ligand

D. $F^-$ is a chelating ligand

**Answer:**

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**11.** In $\left[Fe^{11}(CN)_6\right]^{4-}$ the central metal ion is

A. Fe

B. $Fe^{2+}$

C. $Fe^{+3}$

D. $CN^-$

**Answer:**

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**12.** The coordination number of Ni(II) in $\left[Ni(CN)_4\right]^{2-}$ is

A. 2

B. 4

C. 5

D. 6

**Answer:**

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**13.** The name of $\left[Pt^{IV}(NH_3)_2Cl_2\right]^{2+}$ is

A. Diamminedichloroplatinum(IV) ion

B. Diamminedichloroplanitate(IV)

C. Diamminedichloroplatinum

D. Dichlorodiammineplatinum(IV) ion

**Answer:**

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**14.** For a compound $K_4\left[Fe(CN)_6\right] \rightarrow 4K^+ + \left[Fe(CN)_6\right]^{4-}$ the

complex ion is

A. $K^+$

B. $CN^-$

C. $Fe^{II}$

D. $\left[Fe(CN)_6\right]^{4-}$

**Answer:**

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**15.** A metal ion from the first transition series forms an octahedral complex with magnetic moment of

4.9 BM and another octahedral complex which is diamagnetic .The metal ion is

A. $Fe^{2+}$

B. $Co^{2+}$

C. $Mn^{2+}$

D. $Ni^{2+}$

**Answer:**

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**16.** Paramagnetic moment is expressed in

A. Debye unit

B. K Joules

C. BM

D. ergs

**Answer:**

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**17.** The type of isomerism found in the complex $\left[Co(NO_2)(NH_3)_5\right]SO_4$ and $\left[Co(SO_4)(NH_3)_5\right]NO_2$

A. Hydrate isomerism

B. Coordination isomerism

C. Linkage isomerism

D. Ionisation

**Answer:**

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**18.** What are the important features of valence bond theory?

A. geometry

B. magnetic

C. nature of ligand

D. colour

**Answer:**

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## Self Evaluation B Answer In One Or Two Sentences

**1.** What are simple salts? Give one example.

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**2.** What are double salts? Give one example.

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**3.** Which is a double salt ?

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**4.** What are ligands and coordination number?

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**5.** Give one example for a monodentate ligand, a bidentate ligand and a chelating ligand.

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**6.** Name the following complexes

(a) $\left[Co(NH_3)_5(H_2O)\right]Cl_3$ (b) $Na\left[B(NO_3)_4\right]$

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**7.** Write the IUPAC name for the following

(i) $K_2\left[Fe(CN)_3(Cl)_2(NH_3)\right]$

(ii) $\left[Fe(CN)_6\right]^{4-}$ )

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**8.** Give the structure for the following compounds

(i) Pentaamminechlorocobalt (III) ion

(ii) Triamminetrinitrito -kN Cobalt (III)

(iii) tetraammineaquabromidocobalt (III) nitrate

(iv) Dichloridobis (ethane-1,2-diamine )cobalt (III) chloride

(v) Tetraamminecopper(II) sulphate

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**9.** Draw the structures of geometrical isomers of $\left[Fe(NH_3)_2\right)(CN)_4]^-$

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**10.** What are chelates? Give one example.

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Self Evaluation C Answer Not Exceeding 60 Words

**1.** Explain coordination and ionisation isomerism with suitable examples.

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**2.** Mention the type of hybridisation and magnetic property of the following complexes using VB theory

a) $[FeF_6]^{4-}$ b) $[Fe(CN)_6]^{4-}$

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**3.** For the complexes $K_4\left[Fe(CN)_6\right]$, $\left[Cu(NH_3)_4\right]SO_4$ mention

a) Name b) Central metal ion c) Ligands d) Coordination number

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**4.** How is the paramagnetic moment related to the number of unpaired electrons in?

a) $K_4\left[Fe(CN)_6\right]$ b) $K_3\left[Fe(CN)_6\right]$

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5. In what way $[FeF_6]^{4-}$ differs from $[Fe(CN)_6]^{4-}$.

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6. $[Ni(CN)_4]^{2-}$ diamagnetic, whereas $[NiCl_4]^{2-}$ is paramagnetic. Explain.

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7. $[Cu(NH_3)_4]^{2+}$ is square planar, where as $[NiCl_4]^{2-}$ is tetrahedral. Explain.

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**8.** What are the limitations of VB theory?

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**9.** The ferric state of haemoglobin is called .....

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**10.** Chlorophyll in a leaf is required for.....

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