

COORDINATION COMPOUNDS

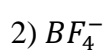
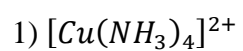
- The ligand called π -acid is
 - NH_3
 - $\text{C}_2\text{O}_4^{2-}$
 - CO
 - ethylene diamine
- In which of the following complexes metal is in highest oxidation state?
 - $[\text{Ni}(\text{CO})_4]$
 - $[\text{Ni}(\text{NH}_3)_6](\text{BF}_4)_2$
 - $\text{K}_2[\text{NiF}_6]$
 - $\text{K}_4[\text{Ni}(\text{CN})_6]$
- Fac-Mer isomerism is associated with which of the following complexes? (M=Central metal)
 - $[\text{M}(\text{AA})_3]$
 - $[\text{MA}_3\text{B}_3]$
 - $[\text{M}(\text{AA})_2]$
 - $[\text{MABCD}]$
- The number of chloride ions produced by complex tetraaminechloroplatinum(IV) chloride in an aqueous solution is
 - four
 - one
 - three
 - two
- Which of the following carbonyls will have the strongest C—O bond?
 - $\text{V}(\text{CO})_6^-$
 - $\text{Cr}(\text{CO})_6$
 - $\text{Fr}(\text{CO})_5$
 - $[\text{Mn}(\text{CO})_6]^+$
- An excess of AgNO_3 is added to 100 ml of 0.01 M solution of dichlorotetraaquachromium (III) chloride. The number of moles of AgCl precipitated would be
 - 0.001
 - 0.01
 - 0.003
 - 0.002
- Which of the following complex has same oxidation state of the central metal atom in the cationic and anionic part?
 - $[\text{Pt}(\text{NH}_3)_4 \text{Cl}_2]$
 - $[\text{Pt}(\text{Py})_4] [\text{Pt} \text{Cl}_4]$
 - $[\text{Pt}(\text{NH}_3)_4] [\text{Pt} \text{Cl}_6]$
 - In all the above
- Considering H_2O as a weak field ligand, the number of unpaired electrons in $[\text{Mn}(\text{H}_2\text{O})_6]^{2+}$ will be (atomic number of Mn=25)
 - three
 - five
 - two
 - four

- 18) A reagent used for identifying nickel ion is
- 1) Potassium ferrocyanide
 - 2) Neutral ferric chloride
 - 3) Phenolphthalein
 - 4) dimethyl glyoxime
- 19) Which of the following coordination entities should be expected to absorb light of lowest frequency?
- 1) $[\text{Cr}(\text{en})_3]^{3+}$
 - 2) $[\text{Cr}(\text{CN})_6]^{3-}$
 - 3) $[\text{Cr}(\text{NH}_3)_6]^{3+}$
 - 4) $[\text{CrCl}_6]^{3-}$
- 20) Which of the following is diamagnetic in nature?
- 1) Co^{3+} octahedral complex with strong field ligands
 - 2) Co^{2+} in tetrahedral complex
 - 3) Co^{3+} octahedral complex with weak field ligands
 - 4) Co^{2+} in square planar complex
- 21) Both geometrical and optical isomerisms are exhibited by
- 1) pentaamminechlorocobalt (III) ion
 - 2) tetraamminedichlorocobalt(III) ion
 - 3) dichlorobis (ethylenediamine) cobalt (III) ion
 - 4) triamminotrichlorocobalt (III) ion
- 22) Which of the following complex has σ and π bonds
- 1) $[\text{Co}(\text{CO})_5\text{NH}_3]^{2+}$
 - 2) $[\text{Cr}(\text{C}_2\text{O}_4)_3]^{3-}$
 - 3) $[\text{Co}(\text{en})_3]^{3+}$
 - 4) $[\text{Sn}(\text{CH}_3)_4]$
- 23) Among the following, the species having square planar geometry for central atom are
- i) XeF_4
 - ii) SF_4
 - iii) $[\text{NiCl}_4]^{2-}$
 - iv) $[\text{PdCl}_4]^{2-}$
- 1) i and ii
 - 2) i and iv
 - 3) i and iii
 - 4) iii and iv
- 24) Which among the following complex entities will have dipole moment=0?
- I) $[\text{Ni}(\text{CN})_4]^{2-}$
 - II) Cis- $[\text{Pt}(\text{NH}_3)_2\text{Cl}_2]$
 - III) trans- $[\text{Pt}(\text{NH}_3)_2\text{Cl}_2]$
- 1) I
 - 2) I, III
 - 3) III
 - 4) II, III

- 33) Which of the following complex ions is expected to absorb visible light
- 1) $[\text{Cr}(\text{NH}_3)_6]^{3+}$ 2) $[\text{Sc}(\text{H}_2\text{O})_3(\text{NH}_3)_3]^{3+}$
3) $[\text{Ti}(\text{en})_2(\text{NH}_3)_2]^{4+}$ 4) $[\text{Zn}(\text{NH}_3)_6]^{2+}$
- 34) Out of the following metals, which forms polynuclear carbonyl?
- 1) Mg 2) Mn 3) Na 4) All
- 35) The oxidation number of cobalt in $\text{K}[\text{Co}(\text{CN})_4]$ is
- 1) -1 2) +3 3) +1 4) -3
- 36) The complex which is maximum stable is
- 1) $[\text{Fe}(\text{H}_2\text{O})_6]^{3+}$ 2) $[\text{Fe}(\text{C}_2\text{O}_4)_3]^{3-}$ 3) $[\text{Fe}(\text{Cl}_6)]^{3-}$ 4) $[\text{Fe}(\text{CN})_6]^{3-}$
- 37) Which of the following complex compounds will exhibit highest paramagnetic behaviour?
- 1) $[\text{Co}(\text{NH}_3)_6]^{3+}$ 2) $[\text{Ti}(\text{NH}_3)_6]^{3+}$ 3) $[\text{Cr}(\text{NH}_3)_6]^{3+}$ 4) $[\text{Zn}(\text{NH}_3)_6]^{2+}$
- 38) In which of the following pairs of species the number of unpaired electrons is same?
- 1) $[\text{CoF}_6]^{3-}$ and $[\text{Fe}(\text{CN})_6]^{3-}$ 2) $[\text{Fe}(\text{CN})_6]^{3-}$ & $[\text{Fe}(\text{CN})_6]^{4-}$
3) $[\text{CoF}_6]^{3-}$ and $[\text{FeF}_6]^{3-}$ 4) $[\text{Fe}(\text{CN})_6]^{4-}$ and $[\text{Ni}(\text{CN})_4]^{2-}$
- 39) Number of unpaired electrons in d^4 low spin octahedral complex are
- 1) 1 2) 3 3) zero 4) 2
- 40) Which of the following complex will give white precipitate with barium chloride solution?
- 1) $[\text{Cr}(\text{NH}_3)_5\text{SO}_4]\text{Cl}$ 2) $[\text{Cr}(\text{NH}_3)_5\text{Cl}]\text{SO}_4$ 3) $[\text{Co}(\text{NH}_3)_6]\text{Br}_3$ 4) None of these

- 41) $[\text{Fe}(\text{CN})_6]^{3-}$ ion has magnetic moment of 1.73 B.M. While $[\text{Fe}(\text{H}_2\text{O})_6]^{3+}$ has a magnetic moment of 5.92 B.M. Thus, hybridization of Fe in both the complexes are respectively
 1) $\text{sp}^3\text{d}^3, \text{sp}^3\text{d}^2$ 2) $\text{sp}^3\text{d}^3, \text{d}^2\text{sp}^3$ 3) $\text{d}^2\text{sp}^3, \text{sp}^3\text{d}^2$ 4) $\text{d}^2\text{sp}^3, \text{d}^2\text{sp}^3$
- 42) In $[\text{Ag}(\text{CN})_2]^-$, the number of π -bonds is
 1) 2 2) 6 3) 4 4) 3
- 43) How many EDTA^{4-} ligands can surround calcium ion in the complex
 1) 3 2) 2 3) 1 4) 8
- 44) The hypothetical complex chlorodiaaquatrimmincobalt (III) chloride can be represented as
 1) $[\text{Co}(\text{NH}_3)_3(\text{H}_2\text{O})_2\text{Cl}]\text{Cl}_2$ 2) $[\text{Co}(\text{NH}_3)_3(\text{H}_2\text{O})\text{Cl}_3]$
 3) $[\text{Co}(\text{NH}_3)_3(\text{H}_2\text{O})_3]\text{Cl}_3$ 4) $[\text{Co}(\text{NH}_3)_3(\text{H}_2\text{O})_2\text{Cl}]$
- 45) EAN of Zn in $[\text{Zn}(\text{OH})_4]^{2-}$ complex is
 1) 36 2) 26 3) 16 4) 46
- 46) When 0.1 mol $\text{CoCl}_3(\text{NH}_3)_5$ is combined with excess AgNO_3 , then 0.2 mol AgCl is obtained. The conductivity of the solution suits the
 1) 1:2 electrolyte 2) 3:1 electrolyte 3) 1:1 electrolyte 4) 1:3 electrolyte
- 47) The most stable complex among the following is
 1) $\text{K}_3[\text{Al}(\text{C}_2\text{O}_4)_3]$ 2) $[\text{Ag}(\text{NH}_3)_2]\text{Cl}$ 3) $\text{K}_2[\text{Ni}(\text{EDTA})]$ 4) $[\text{Pt}(\text{en})_2]\text{Cl}_2$
- 48) Which of the following coordination entities should be expected to absorb light of lowest frequency?
 1) $[\text{CrCl}_6]^{3-}$ 2) $[\text{Cr}(\text{CN})_6]^{3-}$ 3) $[\text{Cr}(\text{NH}_3)_6]^{3+}$ 4) $[\text{Cr}(\text{en})_3]^{3+}$

49) The ion which is not tetrahedral in shape is?



50) Which of the following complex will show geometrical as well as optical isomerism ?

