

Model Question Paper
Coordination Compounds and Bio-Coordination Compounds - Part IV

12th Standard

Chemistry

Reg.No. :

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I. Answer all the questions.

II. Use Blue pen only.

III. Question No 16 is compulsory

Time : 01:30:00 Hrs

Total Marks : 45

6 x 1 = 6

Section-A

- 1) A cationic complex is
(a) $[Co(NH_3)_6]Cl_3$ (b) $Na[Ag(CN)_2]$ (c) $Na_2[Zn(CN)_4]$ (d) $K[Au(CN)_2]$
- 2) Ligands are
(a) electron acceptors (b) electron donors (c) d-block metal ions (d) Lewis acids
- 3) A bidentate ligand is
(a) $NH_2 - NH_3^+$ (b) $NH_2 - CH_2 - CH_2 - NH_2$ (c) $CH_3 - CH_2 - NH_2$ (d) $(CH_3)_2NH$
- 4) The ligand, water is named as
(a) hydro (b) aquo (c) aqua (d) hydrogen oxide
- 5) The ligand NO_3^- is named as
(a) nitro (b) nitrate (c) nitrite (d) nitride
- 6) The formula of the complex ion formed by Cu^{+2} with ethylene diamine is (co-ordination number of $Cu^{+2} = 4$)
(a) $[Cu(en)]^{2+}$ (b) $[Cu(en)_2]^{2+}$ (c) $[Cu(en)_3]^{2+}$ (d) $[Cu(en)_4]^{2+}$

Section-B

- 7) Write note on iron-porphyrin complex.
- 8) Give an example for optical isomerism in complexes.
- 9) Explain coordination isomerism.
- 10) Calculate the paramagnetic moment of Fe^{2+} ion
- 11) Write the formula, structure and type of hybridization of tetra cyanonickelate (II) ion.
- 12) What are possible isomers for $[Co(NH_3)_4Cl_2]Br$?

6 x 3 = 18

Section-C

- 13) Discuss the relationship between coordination number, type of hybridization and geometry with an example.
- 14) Write the name, central metal ion, ligands coordination number and shape of (i) $[Cu(NH_3)_4]SO_4$ (ii) $K_4[Fe(CN)_6]$
- 15) Write the IUPAC names of
(i) $[Co(NH_3)_5H_2O]Cl_3$ (ii) $Na[B(NO_3)_4]$
(iii) $[Co(en)_2Cl_2]^+$ (iv) $K_3[CoCl_6]$
- 16) a) How is paramagnetic moment related to the number of unpaired electrons in (a) $[K_4(FeCN)_6]$ (b) $[K_3(FeCN)_6]$

4 x 5 = 20

(OR)

- b) $(Ni(CN)_4)^{2-}$ is square planar whereas $[NiCl_4]^{2-}$ is tetrahedral. Why?
