Co-ordination Compounds

Q.1 How many ions are produced from the complex $[Co(NH_3)_6]Cl_2$ in solution?

(a) 6 (b) 4 (c) 3 (d) 2

Q.2 Amongst the following, the most stable complex is

(a) $[Fe(H_2O)_6]^{3+}$ (b) $[Fe(NH_3)_6]^{3+}$ (c) $[Fe(C_2O_4)_3]^{3-}$ (d) $[FeCl_6]^{3-}$

Q.3 Amongst the following ions which one has the highest magnetic moment value?

(a) $[Cr(H_2O)_6]^{3+}$ (b) $[Fe(H_2O)_6]^{2+}$ (c) $[Zn(H_2O)_6]^{2+}$ (d) $[Ni(NH_3)_6]^{2+}$

Q.4 The correct IUPAC name of $[Pt(NH_3)_2Cl_2]$ is

(a) Diamminedichloridoplatinum(II)
(b) Diamminedichloridoplatinum(IV)
(c) Diamminedichloridoplatinum(I)
(d) Dichloridodiammineplatinum(IV)

Q.5 which of the following species is not expected to be a ligand?

(a) NO (b) NH_4^+ (c) $NH_2CH_2CH_2NH_2$ (d) CO

Q.6 Read the given passage and answer the questions that follow:-

Transition metals form complex compounds which plays a very important role in our daily life. Complexes are also formed by other group elements e.g. Chlorophyll is coordination compound of Mg. Organometallic compounds like Grignard reagent- is most useful in organic

chemistry. Complexes are used in medicines, analytical chemistry, qualitative analysis, electroplating, biological processes. Stability of complexes depends upon charge on central metal ions, strength of ligand. Counter ions outside the coordination entity are ionisable but inside the coordination sphere are not ionisable.

(a) Name a complex used as anticancer agent?

(b) What is coordination number of Co in $[Co(en)_3]^{3+}$ and why?

(c) ~~Name a complex used~~ in Predict the number of unpaired electrons in the square planar $[Pt(CN)_4]^{2-}$ ion.

(d) What is meant by ambidentate ligands? Give one example?

Co-ordination complexes

~~Q1: Why transition elements show variable oxidation state~~

Q1: Write formulae of the following:

a) Sodium dicyanidoaurate (I)

b) Potassium tetrahydroxozincate (II)

Q2: Write the IUPAC names of the following:

$[Co(NH_3)_4 Cl(NO_2)]Cl$

Q3: Out of $[CoF_6]^{3-}$ and $[Co(C_2O_4)_3]^{3-}$, which one complex is (i) diamagnetic (ii) more stable (iii) outer orbital complex (iv) low spin complex (v) [At. No. of Co = 27]

Q4: Draw a figure to show splitting of d-orbitals in octahedral crystal field. How does the magnitude of Δ_o and β decide the configuration of d-orbitals in a complete entity?

Q5: The spin only magnetic moment of $[MnBr_4]^{2-}$ is 5.9 B.M. Predict the geometry of the complex ion.

Q6: $[NiCl_4]^{2-}$ is paramagnetic while $[Ni(CO)_4]$ is diamagnetic. Why?

Q7: Write the difference between a double salt and a complex.

Q8: Explain $[Co(NH_3)_6]^{3+}$ is an inner-orbital complex whereas $[Ni(NH_3)_6]^{2+}$ is an outer-orbital complex.