5.4 EXERCISE 2 – Complex ions

1. Explain the meaning of the following terms:

   a) complex ion
   b) ligand
   c) coordination number

2. Write equations to show how the following species form complex ions:

   a) Fe^{2+} and H_2O
   b) Fe^{2+} and CN^-
   c) Fe^{3+} and CN^-
   d) Cr^{3+} and NH_3
   e) Ag^+ and $S_2O_3^{2-}$
   f) Co^{2+} and Cl^-
   g) Fe^{2+} and $H_2NCH_2CH_2NH_2$
   h) Cr^{3+} and $C_2O_4^{2-}$
   i) Cu^{2+} and $edta^{4-}$

   In each case state whether the ligand is unidentate, bidentate or hexadentate.

3. Explain how the following complexes are useful:

   a) haem
   b) $PtCl_2(NH_3)_2$
   c) $[Ag(NH_3)_2]^+$
   d) $[Ag(S_2O_3)_2]^{3-}$
   e) $[Ag(CN)_2]^-$