

**APPLICATION OF COORDINATION COMPOUNDS**

**Topic Name : Applications of Coordination Compounds**

Coordination compounds find numerous applications in all the major fields of activity. Herein, we shall briefly describe some of the important applications of coordination compounds as:

- i. **In the animal world:**
  - The red colour of blood is due to pigment haemoglobin which is a coordination compound of iron (II). In haemoglobin, the ferrous ion binds oxygen molecules and transports oxygen to all the cells of the organism and thus perform a very vital function in the animal system.
  - Many biochemical reactions are catalyzed by enzymes which contain zinc, copper, manganese, molybdenum in the form of coordination complexes.
- ii. **In the plant world:** Chlorophyll, an important constituent of green plants, is a coordination compound containing magnesium (II). In the presence of sunlight, chlorophyll in green plants help to synthesize carbohydrates from water and carbon dioxide and this process is known as photosynthesis.
- iii. **In medicine:**
  - Many medicines are coordination compounds. For example, vitamin B<sub>12</sub> is a coordination compound of cobalt and is essential to prevent anaemia.
  - *Cis*-platin having the formula [PtCl<sub>2</sub>(NH<sub>3</sub>)<sub>2</sub>] is found to be useful in the treatment of cancer.
- iv. **In the extraction of metals:**
  - In the extraction and purification of nickel, nickel tetracarbonyl complex is formed (Mond's process).
  - In the extraction of silver as well as gold, their cyano complexes are formed.
- v. In electroplating, coordination compounds of gold and silver in the form of their cyano complexes are used in electroplating articles with gold or silver metals.
- vi. **In pigments:** Many pigments such as phthalocyanines are coordination compounds. These pigments are used in paints.
- vii. **In analytical chemistry:** Coordination compounds find many applications in analytical chemistry.
  - In detection and estimation of nickel ions which form red rose complex with dimethyl glyoxime and magnesium ions which form a yellow complex with 8-hydroxy quinoline.
  - In the separation of copper ions from cadmium ions by forming their cyano complexes.