MAHATMA GANDHI UNIVERSITY

CBCSS BSc Programme in Chemistry

Fifth Semester

Core Course :CH5B01- Chemistry of d and f block elements

Model Question Paper

Time: 3 Hours Total Weightage: 25

Section A

(Answer all questions .A bunch of four questions carries weightage of 1)

I

- The first transition series begins with ----------
- Zn, Cd, Hg ions are colourless because they have ---------- electronic configuration
- Maximum oxidation state shown by manganese is ----------
- EAN of iron in $Fe(CO)_5$ is ----------

II

- ---------- is often called muscle Hb
- Oxidation state of a metal in metal carbonyl is ----------
- The general electronic configuration of lanthanides is ----------
- Hexafluorocbalt(III) ion is a ---------- complex

III

- IUPAC name of the complex $K[Ag(CN)_2]$ is ----------
- Vitamin B_{12} is a complex of ---------- metal
- Dimethylglyoxime is used to identify ---------- metal ion
- The royal blue colour of $[Re_2Cl_8]^{2-}$ is due to ---------- transition

IV

- In coordination compounds the negative groups or neutral molecules attached to central metal atom are called ----------
- Give an example for dihapto ligand
- Most common oxidation state of actinides is ----------
- The overlap of the filled metal orbital with the vacant molecular orbitals of ligand in organometallic compounds is called ---------- bonding

Section B

(Answer any five questions. Each question carries weightage of 1)

- Point out the differences between double salts and coordination compounds
- Cu(I) is diamagnetic while Cu(II) is paramagnetic. Why?

- What is lanthanide contraction?
- Give the structure of $Ni(CO)_4$.
- Write the role of Zn in biochemistry
- What is Wilkinson's catalyst?
- Explain ambidentate ligand. Give an example
- What is Na/K pump?

Section C

(Answer any four questions. Each question carries weightage of 2)

- Why do transition metals show variable valency?
- Mention the factors affecting stability of a complex
- Why $[Ni(CN)_4]^{2-}$ diamagnetic and square planar?
- What are high spin and low spin complexes?
- Lanthanides and actinides are placed separately in the periodic table. Why?
- Write a note on Zeigler- Natta catalyst

Section D

(Answer any two questions. Each question carries weightage of 4)

- Tetrahedral complexes are generally high spin. Explain
- Discuss the mechanism of oxygen transport in blood
- Write a note on the general characteristics of transition elements