

**B. Sc. DEGREE (C.B.C.S.S.) EXAMINATION, OCTOBER 2016**  
**SEMESTER V - CHEMISTRY**  
**CHE5CBE - CHEMISTRY OF D AND F BLOCK ELEMENTS**

**Time: Three Hours****Maximum Marks: 60****PART A****I. Answer all questions. Each question carries 1 mark.**

1. What is meant by chelating ligand?
2. Name one hexadentate ligand.
3. Give the formula of the complex tetra ammine dichloro Cobalt( III) chloride
4. Why d block elements are called transition elements?
5. Name one aromatic sandwich compound
6. What is the oxidation number of Ni in  $\text{Ni}(\text{CO})_4$ .
7. What is the oxidation state of Fe in Hb.
8. Excessive intake of Fe causes the disease.....

**(8x1=8)****PART B****II. Answer any six questions. Each question carries 2 marks.**

9. What is the magnetic moment of  $[\text{Fe}(\text{CN})_6]^{3-}$  ion?
10. Complexes of  $\text{Zn}^{2+}$  are colourless. Why?
11. Transition elements act as catalysts. Why?
12. Lanthanides show weak tendency to form complexes. Why?
13. What are Ylides?
14. State 18 electron rule.
15. What are the structures of  $\text{Ni}(\text{CO})_4$  &  $\text{Fe}(\text{CO})_5$ ?
16. What are Zintl ions?
17. What is the function of  $\text{Na}^+/\text{K}^+$  pump?
18. What is Bohr effect?

**(6x2=12)****PART C****III. Answer any four questions. Each question carries 4 marks.**

19.  $[\text{Ni}(\text{CN})_4]^{2-}$  is square planar where as  $[\text{NiCl}_4]^{2-}$  is tetrahedral. Why?
20. Discuss the factors which affect stability of complexes.
21. Comment on oxidation states of lanthanides.
22. How ferrocene is prepared? Give its structure.
23. Write a note on biological functions and toxicity of trace metals.
24. Ni forms tetracarbonyl while Fe forms penta carbonyl. Why?

**(4x4=16)**

## PART D

### IV. Answer any two questions. Each question carries 12 marks.

25. Discuss isomerism in complexes.
26. a) What is lanthanide contraction? Give its cause and consequences?  
b) Write a note on ionization energy of 1<sup>st</sup> row transition elements.
27. Discuss structure of hemoglobin and its mechanism in O<sub>2</sub> transport.
28. a) Write a note on metal carbonyls.  
b) How does Ziegler Nutta catalyst bring about polymerization of alkenes?

(2x12=24)