

TB145140C

Reg. No.....

Name.....

**B. Sc. DEGREE (C.B.C.S.S) EXAMINATION, NOVEMBER 2018**

**(2014 Admission Supplementary)**

**SEMESTER - CORE COURSE (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 co-ordination isomerism?
2. What is meant by co-ordination number? Find the co-ordination number of the complex  $K_4[Fe(CN)_6]$
3. What is meant by bridging ligand? Give one example.
4. Tetrahedral complexes are generally high spin complexes. Why?
5. Give an example of a zintl anion.
6. Select from brackets. Cyanocobalamin is a \_\_\_\_\_. (aminoacid, vitamin, carbohydrate, protein).
7. Siderosis is caused by the deficiency of \_\_\_\_\_.
8. Ferrocene is an example of.....

**(8 × 1 = 8)**

**PART B**

**II. Answer any six questions. Each question carries 2 marks.**

9. Write any two important consequences of lanthanide contraction.
10. Why lanthanides are called f- block elements?
11. What is meant by EAN? Illustrate with an example.
12. Draw the Crystal field splitting of d-orbitals in octahedral ligand field
13. Give two methods for the synthesis of metal carbonyls.
14. How are metal carbonyls classified? Give examples for each.
15. Define organometallic compounds with two examples.
16. What are enzymes?
17. What is Bohr Effect?
18. Give one method for the preparation of Ziesler's salt.

**(6 × 2 = 12)**

**PART C**

**III. Answer any four questions. Each question carries 4 marks.**

19. Trans effect and applications of trans effect.
20. Differentiate between stepwise stability constant and overall stability constant.

21. Transition metals can show variable oxidation state. Illustrate.
22. Draw the structure of haeme group and describe the structure of haemoglobin. What are its functions?
23. Explain cooperativity effect. What is Hill constant?
24. Write a note on  $\pi$ -bonded organometallic compounds.

**(4 × 4 = 16)**

#### **PART D**

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

25. What are lanthanides? Briefly discuss the physical and chemical properties of lanthanides.
26. Explain Jahn-Teller distortion in Cu (II) complexes
27. a) Discuss the preparation and properties of Ferrocene.  
b) Explain Quadruple bond with a suitable example.
28. Discuss the role of alkali and alkaline earth metals in biological systems emphasizing on sodium potassium pump.

**(2 × 12 = 24)**