TB145140B **Reg. No.....**

Name.....

B. Sc. DEGREE (C.B.C.S.S.) EXAMINATION, APRIL 2017
Supplementary – 2014 Admission
SEMESTER V - 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 chelate effect?
2. What is meant by bidentate ligand?
3. What is the coordination number of tris(ethylene diammine)Cobalt(III) ion?
4. Write the common oxidation state of lanthanides.
5. Name one sigma bonded organometallic compound.
6. What are bridged carbonyls?
7. Name one metalloenzyme containing Zinc.
8. Metal present in vitamin $B_{12.}$ is…….

(8x1=8)

PART B

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

9. State Jahn-Teller theorem.
10. What is ionisation isomerism? Give example.
11. Separation of Zr & Hf is a difficult task.Why?
12. Why do transition metals form coordination complexes?
13. Find the EAN of Co and Fe in $Co_2(CO)_8$ and $Fe(CO)_{5.}$
14. What are low nuclearity metal carbonyls and high nuclearity metal carbonysl?
15. What is myoglobin?
16. What is meant by inhibition of enzyme?
17. What is meant by hapticity of a ligand?
18. Write the formula of a) Trichloro(η^2 ethylene) platinate(II) ion
    b) Potassium carbonyl pentacyano ferrate(II)

(6x2=12)

PART C

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

19. Compare the magnetic properties of $[Ni(CN)_4]^{2-}$and$[Ni Cl_4]^{2-}$
20. $CuSO_4.5 H_2O$ is blue while $ZnSO_4 7H_2O$ is colourless. Why?
21. Give two methods of preparation& properties of metal carbonyls.
22. What is the role of myoglobin and hemoglobin in the transport&storage of O_2?
23. What is Zieses salt? Discuss its structure?

24. What are overall stability constant and stepwise stability constant? How are they related?

(4x4=16)

PART D

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

25. Explain CFT applied to octahedral and tetrahedral complexes.
26. a) How is lanthanides separated by ion exchange chromatography?
    b) What are the general characteristics of transition metals?
27. a) Explain Na^{+}/K^{+} pump.
    b) Write the biological functions of Ca & Mg.
28. a) How are organometallic compounds classified?
    b) Discuss the structure of $[Re_2Cl_8]^{2-}$

(2x12=24)