

**B.Sc. DEGREE (C.B.C.S.S.) EXAMINATION, OCTOBER 2013****Fifth Semester****Core Course—CHEMISTRY OF 'D' AND 'F' BLOCK ELEMENTS**

(Common for B.Sc. Chemistry Model I and Model II, B.Sc. Petrochemicals and  
B.Sc. Chemistry Environment and Water Management)

Time : Three Hours

Maximum Weight : 25

**Section A***Answer all questions.**A bunch of four questions carries a weight of 1.*

- I. 1 Densities of the transition elements are quite high due to ———.
- 2 IUPAC name of  $K_3 [Al(C_2O_4)_3]$  is ———.
- 3 The Wittig reagent is example for ———.
- 4 ——— is an example for Zintl ion.
- II. 5 The common oxidation state of all the lanthanides is ———.
- 6 The complex ion  $[Co(NH_3)_6]^{3+}$  shows ——— hybridisation.
- 7 ——— is an example for Ziegler - Natta Catalyst.
- 8 Both myoglobin and Haemoglobin are called ———.
- III. 9  $[Co.Br(NH_3)_5]SO_4$  and  $[Co SO_4 (NH_3)_5] Br$  are ——— isomers.
- 10 The geometry of  $[Ni(CN)_4]^{2-}$  is ———.
- 11 Grignard reagents are generally represented as ———.
- 12 In polynuclear carbonyl clusters, the metal atoms are bonded through ——— single bonds.
- IV. 13 All actinide elements are ——— emitters.
- 14 The device used to measure paramagnetism is ———.

Turn over

15 EAN of Iron in  $\text{Fe}(\text{CO})_5$  is \_\_\_\_\_.

16 A drug used in anticancer is \_\_\_\_\_.

(4 × 1 = 4)

### Section B

*Answer any five questions.  
Each question carries a weight of 1.*

17 Transition metal and their compounds have good catalytic properties. Give one compound used as catalyst.

18 What is a ligand ?

19 What is the number of unpaired electrons in tetrahedral  $[\text{Ni}(\text{CO})_4]$  complex ?

20 What is Wilkinson's catalyst ?

21 Give one example for HnCC clusters.

22 What are glides ?

23 What is Hill constant ?

24 What is actinide contraction ?

(5 × 1 = 5)

### Section C

*Answer any four questions.  
Each question carries a weight of 2.*

25 Explain the role of myoglobin.

26 What is metal cluster ? Illustrate with suitable example.

27 What is Zeise's salt ? Give one method of preparation and structure.

28 Explain the factors affecting stability of a complex.

29 Explain  $\text{S}_\text{N}^2$  substitution reaction of square planar complexes.

30 Explain the magnetic properties of Lanthanides.

(4 × 2 = 8)

### Section D

*Answer any two questions.  
Each question carries a weight of 4.*

31 Discuss carefully and concisely the splitting of  $d$ -orbitals in the case of (a) Octahedral complexes ; and (b) tetrahedral complexes.

32 Discuss the mechanism of oxygen transport in blood.

33 Compare the properties of Second and Third transition series with first transition series.

(2 × 4 = 8)