

B.Sc. DEGREE (C.B.C.S.S.) EXAMINATION, OCTOBER 2012**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. Electronic configuration of Ytterbium is ———.
2. $[\text{Co}(\text{NO}_2)(\text{NH}_3)_5]\text{Cl}_2$ and $[\text{CoO}(\text{NO})(\text{NH}_3)_5]\text{Cl}_2$ exhibit ——— isomerism.
3. One sigma bonded organo metallic complex is ———.
4. Oxidation state of Nickel in $\text{Ni}(\text{CO})_4$ is ———.
- II. 5. In Co-ordination compounds the number of species surrounding the central metal atom are called ———.
6. The type of Hybrid orbitals involved in Octahedral complexes is ———.
7. Draw the Geometry of $\text{Trans Pt Cl}_2 (\text{NH}_3)_4$ ———.
8. Zeigler-Natta Catalyst is used in ——— type of polymerisation.
- III. 9. One metallocene is ———.
10. EDTA is an example for ——— type of ligand.
11. Ion exchange method is used for ——— of Lanthanides.
12. Geometry of $[\text{Zn}(\text{NH}_3)_6]^{2+}$ is ———.
- IV. 13. Zn SO_4 is white in colour ; it is due to ———.
14. ——— compound is an example of low nuclearity carbonyl cluster.
15. Metal ion present in Myo Globin is ———.
16. Mercury Poison causes the disease ———.

 $(4 \times 1 = 4)$ **Turn over**

Section B

Answer any five questions.

Each question carries weight 1.

17. Which is coloured, solution of TiCl_3 or Cl_4 ? Justify your answer.
18. Explain Co-operativity and Bohr effect.
19. Comment on the magnetic properties of $[\text{Co}(\text{NH}_3)_6]\text{Cl}_2$ and $\text{Co}(\text{NH}_3)_6\text{Cl}_3$.
20. What are Cis platin and Carboplatin.
21. Discuss the position of Zinc Cadmium and Mercury in the periodic table.
22. What do you mean by Quadruple bond? Give one example.
23. What are Ylides?
24. What do you mean by Co-ordination isomerism? Give one example.

$(5 \times 1 = 5)$

Section C

Answer any four questions.

Each question carries a weight of 2.

25. Discuss in short the role of alkali and alkaline earth metals in Biological Systems.
26. What is Zeises Salt? How is it prepared? Give its structure.
27. Give a brief account of the non-transitional organometallic compound involving C-C bond with an example.
28. What are Lanthanide contraction? Explain its consequences.
29. Write briefly on carbonyl clusters.
30. Briefly discuss the structure and relative affinity of oxygen for Haemoglobin and Myoglobin.

$(4 \times 2 = 8)$

Section D

Answer any two questions.

Each question carries a weight of 4.

31. Discuss the splitting of d orbitals in octahedral and tetrahedral fields according to crystal field theory.
32. Write Briefly on Bonding in metal Carbonyls giving suitable examples.
33. Explain the characteristic of d-block elements in detail.

$(2 \times 4 = 8)$