

**D.K.M. COLLEGE FOR WOMEN (AUTONOMOUS), VELLORE-1**  
**SEMESTER EXAMINATIONS**  
**APRIL - 2016** **12CCH6A**  
**COORDINATION CHEMISTRY AND METALLURGY**

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Time : 3 Hours

Max. Marks: 75

**SECTION – A (10 x 2 = 20)**

Answer ALL the questions.

1. Define the term ligands.
2. What is meant by chelation?
3. Calculate the EAN of Co(III) in  $[\text{Co}(\text{NH}_3)_6]^{3+}$ .
4. What is meant by crystal field splitting?
5. What are called mononuclear carbonyls?
6. Give examples of binuclear carbonyls.
7. Define smelting.
8. What is meant by concentration of ore?
9. Write the preparation of ammonium molybdate.
10. What are Misch metals?

**SECTION – B (5 x 5 = 25)**

Answer any FIVE of the following questions.

11. Explain the ionisation and linkage isomerism.
12. Explain the postulates of VBT.
13. Explain low spin and high spin complexes with suitable examples.
14. Give the comparison between VBT and CFT.
15. How  $\text{Cu}^{2+}$  and  $\text{Cd}^{2+}$  ions are separated in the qualitative analysis?
16. Describe Van Arkel method of refining.
17. Explain the magnetic property and oxidation states of Mn and Fe.
18. Explain the magnetic properties and spectra of lanthanides.

**SECTION – C (3 x 10 = 30)**

Answer ALL the questions.

19. (a) Explain in detail about geometrical isomerism in 4 and 6 - coordinated complexes.  
(Or)  
(b) Explain in detail about optical isomerism in 6 – coordinated complexes.
20. (a) Explain the crystal field splitting of d orbitals in tetrahedral and octahedral complexes.  
(Or)  
(b) Discuss the structure and bonding of  $\text{Mn}_2(\text{CO})_{10}$  and  $\text{Co}_2(\text{CO})_8$ .
21. (a) Write short notes on i) Zone refining ii) Electrolytic refining.  
(Or)  
(b) i) Give the preparation, properties and uses of  $\text{UF}_6$ . (4)  
ii) Explain lanthanide contraction and its consequences. (6)