



**LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034**

**B.Sc. DEGREE EXAMINATION – CHEMISTRY**

**SIXTH SEMESTER – NOVEMBER 2016**

**CH 6607/CH 6601 – COORDINATION CHEMISTRY**

Date: 05-11-2016

Dept. No.

Max. : 100 Marks

Time: 09:00-12:00

**PART-A**

Answer **ALL** questions

(10x2=20 marks)

1. Define the term 'CFSE'.
2. What is meant by nephelauxetic effect?
3. What is photoisomerization? Give an example.
4. Give an example for  $S_N2$  reaction which takes place in an octahedral complex.
5. Define the term 'cis effect'.
6. What are Schiff's bases? Give their uses.
7. What are metallocenes? Give an example.
8. State the 18-electron rule.
9. What are co-enzymes? Give an example.
10. Mention any two trace elements used in biological systems.

**PART-B**

Answer any **EIGHT** questions

(8x5=40 marks)

11. State and explain the Jahn-Teller theorem.
12. Give the evidences for covalency in transition metal complexes.
13. Explain the mechanism of photo substitution reaction by taking an appropriate example.
14. Write the dissociative mechanism of substitution reaction in square planar complexes.
15. What are non-complementary reactions? Explain them with suitable examples.
16. What is 'trans effect'? Explain it with an example.
17. What are metal phthalocyanins? How are they synthesized?
18. Explain the structure of ferrocene.
19. What are metal carbonyls? Explain their classification with one example for each.
20. What is Ziegler-Natta catalyst? Explain its preparation and uses.
21. Write a note on *in vivo* nitrogen fixation.
22. What are contrast agents? Explain their usefulness in MRI.

**PART-C**

Answer any **FOUR** questions

(4x10=40 marks)

23. a) Construct the MO energy level diagram for  $\text{CoF}_6$ .(6)  
b) Mention the drawbacks of CFT. (4)
24. a) Explain the crystal field splitting of 'd' orbitals in octahedral complexes.(6)  
b) Write a note on metal template synthesis.(4)
25. Explain the inner sphere and outer sphere electron transfer mechanisms with examples.
26. a) Explain hydroformylation with an appropriate example. (5)  
b) Write a note on Monsanto acetic acid process.(5)
27. a) Write a note on polymerization of olefins.(5)  
b) Explain the biological role of carboxypeptidase-A.(5)
28. a) What are radiopharmaceuticals? Explain their importance in medicinal chemistry.(6)  
b) Write short notes on chelate therapy.(4)

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