

## INORGANIC CHEMISTRY - II

Time : Three Hours

Maximum : 75 Marks

Answer ALL questions  
ALL questions carry EQUAL marks (5 x 15 = 75)

- 1 a What are organometallic compounds? How are they classified? Give suitable examples for each type. (7)
- b State and explain 18 electron rule. Explain the stability of transition metal alkyl complexes on the basis of M-C bond types. (8)
- OR
- c What are metal alkyl complexes? Explain any two methods of preparation of metal alkyls. Discuss the stability of transition metal alkyl complexes on the basis of M-C bond types. (10)
- d Write a short note on insertion of Co to M - C bonds and insertion of metals with C - H bonds, (5)
- 2 a Explain the polymerization reaction by using Zeigler - Natta catalyst. (6)
- b What are alkene complexes? Explain the synthesis of alkene complexes by ligand substitution by reduction and by metal atom synthesis. (9)
- OR
- c Discuss the hydrocarbonylation of olefins. (6)
- d Explain the catalytic hydrogenation by Wilkinson's catalyst. (9)
- 3 a What are arene complexes? Explain the synthesis, structure and properties of half-sandwich complexes. (10)
- b Discuss the synthesis, properties and reactivities of allyl and dienyl complexes. (5)
- OR
- c What are metallocenes? How are they synthesised? Explain the bonding in Metallocenes. (9)
- d How are multi-decker complexes prepared? Mention their properties. (6)
- 4 a Write a brief note on chemistry' of carboranes. (9)
- b Write a short note on pi-acceptor ligands. (6)
- OR
- c What is meant by photoreduction, photo oxidation, photo substitution and photo isomerization reactions? Give suitable examples. (7)
- d What are carbonyls? How are they classified? Explain their structures. (6)

Cont...

4 Cont...

e Write any two applications of IR spectroscopy to identify the terminal and bridging CO. (2)

5 a What do you understand by supramolecular chemistry? What types of forces are present in supramolecules? (10)

b What are toxic metals? List out the toxic effect of Cd, Hg, Pb and plutonium in human beings. (5)

OR

c i) Give few examples of supramolecular host-guest compounds with the type of interactions they are having. (3)

ii) How are Au complexes used as anti-rheumatic agents and explain their mode of action? (4)

d i) What is chemotherapy? Explain with examples. (3)

ii) Discuss any three applications of supra-molecular chemistry. (5)

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