

- (e) Distinguish between singlet and triplet carbenes.
- (f) What is the nature of M-C bond in alkali metal complexes ?
- (g) Give examples where cyclopentadienyl group acts as a fine electron ligand.

2×7=14

Unit I

- 2. (a) What are intercalation compounds of graphite ? Discuss their formation stages. 7
- (b) Discuss the structure of Binuclear and Hexanuclear carbonyl type of metal dusters. 7
- 3. (a) Briefly explain the metal complexes of carborane anions. 7
- (b) Explain the structure and bonding of B_6H_{10} and B_9H_{15} Boranes. 7

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Unit II

- 4. (a) Explain the chemical properties of metal hydride compounds. 8
- (b) Briefly explain the carbonyl hydride anions. 6
- 5. (a) Write a note on mononuclear polyhydride. 7
- (b) Discuss the synthetic applications of metal hydrides. 7

Unit III

- 6. (a) What are metal alkyne complexes ? Differentiate the different types of bonding in detail in these complexes with suitable example. 10
- (b) Give methods of preparation of π^3 -allyl complexes. 4

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P.T.O.

7. (a) Briefly explain the electron deficient compounds of Aluminium. 7

(b) Explain the bonding in Schrock type carbene complexes. 7

Unit IV

8. (a) Draw and discuss the molecular orbital diagram of ferrocene. 10

(b) Write a short note on Multidecker Sandwich Compounds. 4

9. (a) Explain the bonding in η^4 -complexes of cyclopentadiene. 6

(b) Give the synthesis and modes of bonding of η^6 -complexes of benzene and its derivatives. 8

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(12/19-II)

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M. Sc. EXAMINATION

(For Batch 2017 & Onwards)

(Third Semester)

CHEMISTRY

CHI(H)-302

Inorganic Special-II

Time : Three Hours

Maximum Marks : 70

Note : Attempt Five questions in all, selecting at least one question from each Unit. Q. No. 1 is compulsory. All questions carry equal marks.

1. (a) Define Heteropolyanions.

(b) How many vertices are present in P_4O_6 ?

(c) Define Homoleptic Polyhydride anions.

(d) What are sandwich compound?

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P.T.O.