Exam Code: 0431
Sub. Code: 3442

2122

M.Sc. (Applied Chemistry/Pharmaceutical)

First Semester

Paper – 102: Inorganic Chemistry

Time allowed: 3 Hours Max. Marks: 60

***NOTE**: Attempt five questions in all, including Question No. IX (Unit-V) which is compulsory and selecting one question each from Unit I -IV.*

x-x-x

UNIT – I

I. a) Draw molecular orbital energy level diagram of NO molecule. Write about its magnetic behaviour and calculate bond order.

b) Discuss in detail about Nephelauxetic effect. (6,6)

II. a) Discuss completely about Wade's rules. Explain and classify different types of carboranes on the basis of these rules.

b) Write a note on heteropolyanions. (7,5)

UNIT – II

III. a) Discuss Alkene Hydrogenation completely. Explain its mechanism with help of catalytic cycle using suitable catalyst.

b) Write synthesis of any two organometallic compounds. (8,4)

IV. a) What is Hydroformylation reaction? Discuss its mechanism with help of catalytic cycle using Cobalt catalyst.

b) Write a note on spin cross over. (8,4)

UNIT – III

V. a) How crown ethers differ from cryptands? Discuss with help of examples.

b) Write complete note on natural ionophores. (6,6)

VI. a) Explain in detail nuclear fission reaction with suitable examples.

b) Discuss any one radio analytical technique. (7,5)

P.T.O.

UNIT – IV

VII. a) Discuss synthesis, structure, bonding and reactivity of transition metal nitrosyl compounds.

b) Write a brief note on dioxygen complexes. (8,4)

VIII. Discuss hybridization, geometry and shapes of the following:-

a) $XeOF_2$

b) $(SO_4)^{2-}$

c) IF_7

d) PH_3

(4x3)

UNIT – V

IX. Attempt the following:-

a) Heterocatenation

b) Analytical applications of inner transition elements

c) Carboxylic ionophores

d) Short note on carbides

(4x3)

x-x-x