Exam Code: 0431
Sub. Code: 3442

2123

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) Write a complete note on Nephelauxetic Effect.

b) Draw molecular orbital energy level diagram of CO molecule. Also calculate bond order and discuss its magnetic behaviour. (6,6)

II. a) Discuss in detail about carboranes and metallocene carboranes.

b) Define and explain heterocatenation. (8,4)

UNIT – II

III. What is Alkene Hydrogenation? Discuss its mechanism with help of suitable catalyst. Draw catalytic cycle also. (12)

IV. a) Discuss anomalous magnetic moments of inner transition elements.

b) Write a note on magnetic exchange coupling. (7,5)

UNIT – III

V. a) Discuss various types of crown ethers and cryptands.

b) Explain completely carboxylic ionophores. (7,5)

VI. a) Discuss radio analytical techniques in detail.

b) Write a brief note on nuclear fusion. (8,4)

P.T.O.

UNIT – IV

VII. a) Discuss in detail about dinitrogen complexes.

b) Explain bonding in metal carbonyls. (7,5)

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

a) $(ClO_4)^-$

b) $XeOF_4$

c) ClF_3

d) PCl_3 (4x3)

UNIT – V

IX. Attempt the following:-

a) Note on isopolyanions

b) Spin cross over

c) Natural ionophores

d) Sulphur nitrogen compounds (4x3)

x-x-x