Exam Code: 0431
Sub. Code: 3442

2012

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. Calculate its bond order and tell magnetic behaviour.

b) Write note on Heterocatenation. (6,6)

II. a) What are Wade's rules? Explain and classify different types of carboranes on the basis of these rules.

b) Discuss in brief about Isopolyanions. (8,4)

UNIT – II

III. a) Explain in detail about Alkene Hydrogenation. Draw its cycle using Wilkinson's catalyst and discuss mechanism.

b) Write in brief about bonding in organometallic compounds. (7,5)

IV. a) Explain completely Hydroformylation reaction and mechanism with help of catalytic cycle using Cobalt catalyst.

b) What are analytical applications of Inner transition elements? (7,5)

UNIT – III

V. a) Differentiate crown ethers and cryptands with help of examples.

b) Write a complete note on carboxylic ionophores. (6,6)

VI. a) Differentiate nuclear fission and fusion in tubular form.

b) Explain any one radio analytical technique. (6,6)

P.T.O.

UNIT – IV

VII. a) Discuss in detail dinitrogen complexes.

b) Explain important reactions of transition metal nitrosyl compounds. (6.6)

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

i) ClF_3 ii) $(ClO_4)^-$ iii) SF_4 iv) XeF_2

b) Write a note on phosphazenes. (8.4)

UNIT – V

IX. Attempt the following:-

a) Write a note on sulfur-nitrogen compounds

b) Explain Nephelauxetic effect

c) Brief note on spin cross over

d) Natural ionophores (4x3)

x-x-x