Exam. Code: 431
Sub. Code: 2952

1115

M.Sc. (Applied Chemistry / Pharmaceutical) First Semester

Paper – 102: Inorganic Pharmacy

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) Explain crystal field stabilization energy. Calculate CFSE for the following:-

i) d^6 high spin octahedral

ii) d^4 tetrahedral

b) Draw molecular orbital energy level diagram of NO molecule. Also tell bond order and magnetic behaviour.

c) Draw crystal field splitting of octahedral, tetragonal and square planar complexes. (3x4)

II. a) What are Wade's rules? Discuss the applications of these rules in classifying carboranes in closo, nido and arachno carboranes.

b) Discuss in detail about heteropoly anions. (7,5)

UNIT – II

III. a) What is alkene hydrogenation. Discuss the mechanism of alkene hydrogenation using Wilkinson's catalyst.

b) Discuss in brief about π –acid metal complexes. (7,5)

IV. a) What is hydroformylation of alkenes? Discuss its mechanism using Cobalt catalyst.

b) What are inner transition elements? Discuss their magnetic properties and also compare with transition elements. (6,6)

UNIT – III

V. a) Draw structure of:-

i) Dibenzo-18-crown-6

ii) Benzo-15-crown-5

iii) 2,2,2 ___ crypt ligand

b) What are the factors which influence the selectivity of crown ether towards the cations. (6,6)

P.T.O.

VI. a) Discuss in detail cold-lime softening process for water.

b) What is meant by industrial water conditioning? (8,4)

UNIT – IV

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

i) XeF_6
ii) ICl_2
iii) $XeOF_4$
iv) ClF_3

b) Write a note on carbides. (8,4)

VIII. a) Explain synthesis and structures of

i) $Fe(CO)_5$
ii) $Os_3(CO)_{12}$
iii) $Re_2(CO)_{10}$

Show that they obey Ean Rule.

b) Discuss in detail about Fullerenes. (6,6)

UNIT- V

IX. Do as directed:-

a) Complete note on Nephelauxetic effect
b) Tell in brief about applications of Inner transition elements.
c) Write a note on natural ionophores.
d) How is S_4N_4 prepared? Discuss its structure. (4x3)

x-x-x