Assignment II
CHE-302
Sem V 2017
Unit Test II

Unit-I Symmetry

Long Questions:

(1) State & draw all the symmetry elements possessed by the following molecules and assign proper point group to them.
(i) P_4O_{10} (ii) SF_3Cl_3 (iii) $Fe(C_5H_5)_2$ (iv) Acetylene (v) Alene (vi) PCl_5 (vi) H_3BO_3
(vii) Cyclohexene

(2) Point group of SF_6 is Oh (Octahedral); Explain how can we reduce it to D_4h, C_3v & C_4v with suitable example & diagram

(3) Explain the relation between optical activity & symmetry point group of a molecule.

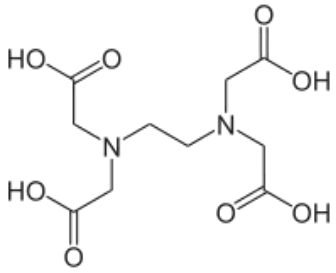
(4) Complete the following multiplication table & show that it follows the laws of multiplication;

C_{3v}	E	C_3^+	C_3^-	σ_{va}	σ_{vb}	σ_{vc}
C_3^+						

(5) Find out equivalent symmetry elements in BCl_3 molecule

Short Questions:

(i) Point group of EDTA is_____



(ii) Give the example of a Molecule belong to the following point groups;
D_{6h}, D_{nh}, D_{3d},C_{4v}, C_{2v}

(iii) Give the definition of "Center of Inversion".

(iv) Define Point Group.

(v) Give the example of 'Abelian Point Group'.

Unit-III Reaction Mechanism

Long Questions:

1. Explain Outer sphere electron transfer reaction for octahedral complexes.

2. Explain Inner sphere electron transfer reaction for octahedral complexes.

3. Explain substitution reaction in square planner complexes.
4. Discuss acid hydrolysis of Octahedral complexes.

Short Que.

1.Define redox reaction.

2. What is an aquation reaction?

Unit-IV

Long Questions:

Q-1. Explain Quadrupole splitting in Moss bauer Spectroscopy.

Q-2. Write a short note on CIS and factors affecting on CIS.

Q-3. Explain the Moss Bauer spectra for,

a) I_2Cl_6,
b) $Na_2[Fe(CN)_6]$,
c) $Fe(CO)_5$,
d) Sodium nitro pruside,
e) Cis and Trans $[Fe(NH_3)_4]Cl_2$.