Assignment
CHE-103
Sem II 2018
Unit Test I & II

UNIT I

Long Question:

Q: 1 what is Chemical –bond ? Explain following bonds

(a) Ionic-bond ,
(b) Covalent bond,
(c) Co-ordination covalent bond
(d) Metalic –bond

Q: 2 What is called hybridization ? Explain following hybridization.

(a) SP , (b) SP^2 , (c) SP^3 (d) dSP^2 (e) SP^3 d
(f) SP^3d^2 (g) SP^3d^3

Q: 3 Accoring to Sedgick- Powell theory explain following molecule :

(a) H_2O (b) SF_4 (c) NH_3 (e) ClF_3 (f) I_3^-

Short questions:

(a) Give defination of Ionic bond.
(b) Give properties of Co – valent bond.
(c) Define : Co-ordination covalent bond.

Unit II

Long Question:

(1) Construct Hamiltonian operator for H_2 molecule.
(2) Explain "Eigen function and Eigen value".
(3) Discuss Physical significance of ψ & ψ2.
(4) Explain the limitations for acceptable wave function.
(5) Derive the wave equation H ψ=E ψ

Short questions:

(a) Define Wave.
(b) What is Operator?

Unit III

Long Question:

(a) What is called Isomerisation? Give its classification with suitable Examples.
(b) Discuss E-Z nomenclature.
(c) Discuss R-S nomenclature.
(d) Discuss possible stereoisomers of Lactic acid.
(e) Discuss possible stereoisomers of Tartaric acid.
(f) Discuss conformation of Ethane.
(g) Discuss Conformation of n-Butane.

Short Questions:

(a) Define: Optical activity.
(b) Define: Chirality.
(c) Who invented sequence rule?
(d) Glucose and Fructose contain how many chiral carbons?
(e) C_6H_{12} molecular formula having how many cyclic isomers?
(f) What is Conformer?
(g) Draw the Chair and Boat forms in Cyclohexene.

Unit IV-

A: Ionic Equilibrium

Q.1 Define following terms.

(1) Electrolyte
(2) Ionic conductance
(3) Specific conductance.
(4) Equivalent conductance.
(5) Molar conductance.
(6) Degree of dissociation.
(7) Hydrolysis of salt.
(8) Buffer solution
(9) Indicators.

Q.2 Discuss the following questions.

(1) Discuss Ostwald's dilution law. OR Derive an equation for Ostwald's dilution law.
(2) Define hydrolysis of salt. Derive an equation of hydrolysis constant of salt of strong acid and weak base, and also derive P^H equation for the salt solution.
(3) Define hydrolysis of salt. Derive an equation of hydrolysis constant of salt of weak acid and strong base, and also derive P^H equation for the salt solution.
(4) What is buffer solution? Derive an equation for buffer solution.
(5) What is indictor? Derive an equation for indictors.

B: Nuclear Chemistry

Long Question:

Define following terms.

(1) What is radio activity?
(2) Rate of disintegration.
(3) Packing fraction

Q.2 Discuss the following questions.

1. Discuss the theory of radioactive disintegration. (Rutherford disintegration theory)
2. How many factors affect stability of nucleus? Discuss Binding energy.