CH-304 Chemistry Practical Laboratory Course- III

(4 hrs Or 6 Periods /week)

NORGANIC CHEMISTRY

(i) Synthesis and Analysis of :

a) Potassium trioxalatoferrate (III), $K_3[Fe(C_2O_4)_3]$
b) Bis (dimethylgyoximato) nickel (II) complex, $[Ni(DMG)_2]$
c) Tetraamminecopper (II) sulphate, $[Cu(NH_3)_4]SO_4$
d) Potassium cis- diaquabis (oxalato)chromate (III) dihydrate, $K[cis\text{-}Cr(H_2O)_2(C_2O_4)_2].2H_2O$

(ii) Gravimetric Analysis (any two)

a) Cu as CuSCN
b) Ni as Ni (dimethyglyoxime)
c) Ba as $BaSO_4$.
d) Pb as $PbCrO_4$

ORGANIC CHEMISTRY

Laboratory Techniques

Steam Distillation

naphthalene from its suspension in water
Clove oil from Clove
Separation of o- and p-nitrophenols

Column chromatography

Separation of flurescein and methylene blue
Separation of leaf pigments from spinach leaves
Resolution of racemic mixture of (+) mendelic acid

Qualitative Analysis

Analysis of an organic mixture containing two solid components using water, $NaHCO_3$, for separation and preparation of suitable derivatives

Stereo chemical Study of Organic Compounds via models

R and S configuration of optical isomers. E, Z Configuration of geometrical isomers.
Conformational analysis of cyclohexanes and substituted cyclohexanes.

PHYSICAL CHEMISTRY

Electrochemistry

a) To determine the strength of the given acid conductometrically using standard alkali solution.
b) To determine the solubility and solubility product of a sparingly soluble electrolyte conduct metrically.
c) To study the saponification of ethyl acetate conductometrically.
d) To determine the ionization constant of a weak acid conductometrically.
e) To titrate potentiometrically the given ferrous ammonium sulphate solution using $KMnO_4$/$K2Cr_2O_7$ as titrant and calculate the redox potential of Fe^{++}/Fe^{+++} system on the hydrogen scale.

Refractometry, Polarimetry

(a) To verify the law of refraction of mixture (e.g. glycerol and water) using Abbe's refractometer.
(b) To determine the specific rotation of a given optically active compound.

Molecular Weight Determination

(a) Determination of molecular weight of a non-volatile solute by Rast method/Beckmann freezing point method.

(b) Determination of the apparent degree of dissociation of an electrolyte (e.g.NaCl) in aqueous solution at different concentrations by ebullioscopy.

Colorimetry

(a) To verify Beer- Lambert's law $KMnO_4/K_2Cr_2O_7$ and determine the concentration of the given solution of the substance.

(Instructions to the Examiner)

CH-304 Chemistry Practical Laboratory Course- III

Max. Marks: 50 **Duration of Exam : 5 hrs.** **Minimum Pass Marks : 18**

INORGANIC CHEMISTRY

(1) Synthesis and Analysis of one of the four syntheses given in the syllabus. 04
(2) Gravimetric analysis of one of the four given in the syllabus 10

Organic Chemistry

Analysis of an Organic mixture containing two solid components using water /$NaHCO_3$/NaOH and preparation of suitable derivatives. 14

OR

Column chromatography techniques/steam distillation

Perform one of the three [illegible] experiments given in the syllabus.

Physical Chemistry

Perform one of the physical chemistry experiments given in the syllabus. 12

Viva- voce 05

Record 05

50