Laboratory Course (CHE-505 L)

Inorganic Chemistry:

Block-1: Inorganic Salt Mixture Semi-Micro Qualitative Analysis

Experiment 1: Introduction to Semi Micro Analysis

Experiment 2: Classification of Cations Into Groups for Qualitative Analysis

Experiment 3: Reactions of Cations

Experiment 4: General Group Seperation and Analysis of Individual Groups

Experiment 5: Model Semi – Micro Analysis of Cations (A Known Salt Mixture-I)

Experiment 6: Model Semi – Micro Analysis of Cations (A Known Salt Mixture-II)

Record analysis of unknown Salt Mixture

Block-2 : Preparation, Calibration and Volumetric Estimations

Experiment -7:1. Preparation of Complexes Tetrammine Copper (II)Sulphate. Hydrate

2. Preparation of hexamine nickel (II) chloride $[Ni(NH_3)_6]Cl_2$

3. Preparation of Chloropentammine Cobalt (III) chloride

4. Preparation of (Tris) Diaminoethane Nickel (II)Sulphate $[Ni(en)_3]SO_4$

5. Preparation of Sodium (tris) Oxalatoferrate (III) $Na_3[Fe(C_2O_4)_3]$

Experiment -8: Calibration of Analytical Apparatus

Experiment -9: 1. Estimation of Ca^{2+} by Substitution Titration Using EDTA

2. Estimation of Ni^{2+} by back Titration Using EDTA

3. Estimation of Mn^{2+} and Mg^{2+} by back Titration Using EDTA

Experiment 10:1 Estimation of Cu in $[Fe(c_2o_4)_3]$

2 Estimation of Fe in Na3 $[Fe(C_2o_4)_3]$

3 Determination of ion exchange Capacity of a Resin.

Block-3: Estimation Involving Volumetry and Gravimetry

Experiment -11: Estimation of Cu^{2+} and Ni^{2+} Present in a sample Solution

Experiment -12: Estimation of Ag^{+} and Ca^{2+} in a Sample Solution

Organic Chemistry:

Block-1 : Accidents in Laboratory – First Aid

Experiment -1 : Safety in Chemical Laboratory

Block-2 : Methods and Manipulation

Experiment – 2 : Laboratory Equipment & Technique

Block-3 : Systematic Qualitative analysis of Carbon compounds

Experiment -3 : Systematic Qualitative analysis of a model organic compounds

Experiment -4 : Systematic Qualitative analysis of a model organic compounds

Experiment -5 : Identification of organic compounds by systematic qualitative analysis

Block-4 : Preparation of Organic compounds

Experiment -6 : Preparation of 1,2,3,4,6- Penta-O-acetyl – β-D glucopyranose

Experiment -6.2:Preparation of 2,4,6 – Tribromo Aniline

Experiment -6.3: Preparation of 1,3,5 – Tribromo Benzene

Experiment -6.4: Preparation of 1,3 – Dinitro Benzene

Experiment -7: Preparation of m-Nitro Aniline

Experiment -7.2: Preparation of 2,4-Dihydroxy Acetophenone

Experiment -7.3: Preparation of 4-Methyl – 7 – hydroxyl coumarin

Experiment -8: Preparation of Benzoly glycine

Experiment -8.2: Preparation of 1,2,3,4 – Tetrahydro carbazole

Experiment -8.3 : Preparation of 9,10 – Dihydro anthracene -9, 10- α,β Succinic anhydride

Block-5 : Quantitative Organic analysis

Experiment-9 : Estimation of Phenol

Experiment-10 : Estimation of Primary Aromatic Amine

Experiment-11 : Estimation of Methyl Ketone

Experiment-12 : Estimation of reducing sugars

Block-6 :Chromatoraphy – Separation technique

Experiment -13 : Chromatography

Experiment -13.2 : Paper Chromatography

Experiment -13.3 : Gas-Liquid Chromatography

Experiment -14 : Seperation of a solid mixture by column chromatography

Physical Chemistry:

M.Sc. (Previous) Practicals

Block-1 : Physical Properties & Distribution Study

Experiment – 1: Determination of density and viscosity of liquids

Experiment – 2: Distribution of I2 between CCI4 and acqueous KI solution And calculation of formation constant of KI3

Experiment – 3: Adsorption of acetic acid on activated charcoal and Verification of Freundlion adsorption isotherm

Block-2: Kinetic Study

Experiment – 4: Kinetics of acids catalyzed hydrolysis of methyl acetate

Experiment – 5: kinetics of Persulphate – Iodide reaction

Block-3: Conductivity study

Experiment – 6: 1. Titration of strong acid with strong base

2. Titration of weak acid with strong base

3. Titration of mixture of acids with strong base

Experiment – 7: 1. Determination of cell constant

2. Determination of solubility product

3. Determination of dissociation constant of acetic acid

Block-4: Potentiometry

Experiment – 8 : 1. Titration of strong acid with strong base

2. Titration of weak acid with strong base

Experiment – 9 : 1. Redox titration of Fe^{2+} with $KMno_4$

2. Single electrode Potential of Cu/Cu^{2+}

Block-5: PH Metry

Experiment – 10:1. Measurement of PH of the given solution

2. Preparation of buffers

3. Determmination of PKa of weak acid

Block-6: Colorimetry

Experiment – 11: Verification of Lambert-Beer's Law

Block-7: Polarimetry

Experiment – 12: 1. Determination of specific rotation of Sucrose

2. Study of kinetics of acid catalysed hydrolysis of Sucrose

Mathematics/ Biology, Spectroscopy & Computers:

M.Sc. (Previous) Practicals

Block-1 : Absorption Spectroscopy

Experiment – 1: Infrared Spectroscopy

Experiment – 2: Analysis of the I.R. Spectra Problems

Experiment – 3: Proton Magnetic Resonance Spectroscopy

Experiment – 4: Analysis of ^{1}HNMR spectrum problem

Experiment – 5: ultraviolet – visible spectroscopy

Experiment – 6: Mass Spectroscopy

Experiment – 7: Analysis of Mass Spectra Problems

Experiment – 8: Structural determination of organic compounds using the Combined spectral data

Block-2: Compound Application in chemistry practicals

Experiment – 9: Basic Language Practicals

Experiment –10: C Language Practicals