COURSE IV BSCCH 104 LABORATORY COURSES I 3 credits

(Inorganic, Organic and Physical)

Inorganic Chemistry Lab I

Unit 1: Introduction Lab techniques: Inorganic Chemistry

Laboratory Note book, Laboratory Apparatus and Operation: Heating, Evaporation, Precipitation, Filtration, Drying and Ignition of precipitation, cooling, weighting; Common Laboratory reagents, Laboratory Safety

Unit 2: Identification of Anion (Known)

Classification of the anion: Anion of class I, Anion of class II, Anion of class III**,** Preliminary Tests for the Anions: Preliminary Tests for the Anions of class I, Preliminary Tests for the Anions class II**,** Preparation of solution for Identification of the anion: Preparation of water extract, Preparation of Sodium Carbonate extract**,** Confirmatory test for the Anion: Test for the Sulphide ions, Test for the Sulphite ions, Test for the Thiosulphate ions, Test for the Nitrite ions, Test for the acetate ions, Test for the Nitrate ions, Test for rthe Oxilate ions, Test for the Chloride ions, Test for the Bromide ions, Testb for the Iodide ions, Test for the Fluoride ions, Test for the Sulphate ions, Test for the Phosphate ions, Test for the Borate ions; Special test for the mixtures of the anions.

Unit 3: Identification of cation (Known)

Classification of the cation into Analytical groups

Solubility and solubility product: Relation between Solubility and Solubility products.

The common ion effect; complex formation

The separation of Cations in to analytical Groups: The precipitation of Group I cations, the separation of Group II cation from Group IV Cations, The Precipitation of Group III Cations, The Precipitation of Group V Cations.

Preliminary Investigation of the Sample, Preparation of solution for the analysis of Cations

Separation of cation into Analytical Groups, Analysis of the cations of Analytical Group I: Separation and Identificationof the cations of Analytical Group I

Analysis of the cations of analytical Group II: Separation of Analytical Group II in to group IIA and Group IIB, Separation of the Cations of group IIA, Separation of the Cations of group IIB, Identification of the cations of Group II

Analysis of the cations of analytical Group III: Separation and Identification of the cations of analytical Group III.

Analysis of the cations of analytical Group IV: Separation and identification of the cations of Analytical group IV.

Analysis of the cations of analytical Group V: Separation and identification of the cations of Analytical group V.

Analysis of the Cations of analytical group VI, Analysis of the Cations of analytical group zero

Organic Chemistry Lab I

Unit 4: Introduction Lab techniques: organic Chemistry

Determination of melting point (Naphthalene, Urea, Benzoic acid, Succinic acid etc.)

Determination of boiling point and Distillation (Toluene, Ethanol, Propanol, ethyl acetate)

Crystallization, Sublimation (Camphor, Phthalic acid, Succinic acid)

Unit 5: Separation Techniques

Simple distillation Methods, Solvent Extraction Method

Unit 6: Qualitative Analysis

Detection of N,S, Halogens, Functional group identification with known samples

Identification of known functional group

Physical Chemistry Lab I

Unit 7: Introduction Lab techniques: Physical Chemistry (One session)

Use of Apparatus: Pipette, Burette, Volumetric flask, Balance, Use of Burner,

Luminous flame, Non luminous flame, Introduction to Instruments ,Colorimeter, Conductometer

Handling of Data,Data analysis,Error Calculation, Plotting of Graph,Writing of Experiments

Safety measures and First Aid

Unit 8: Determination of Surface Tension (Any two)

Organic liquid (alcohol), Detergent (Sodium dodecyl sulphate or cetyltrimethyl ammonium borate) ,Determination of composition of solvent mixture

Unit 9: Determination of Viscosity

Cane sugar solution or Glycerol (more than 5%), Detergent /Determination of CMS(Critical micelle concentration)

Unit 10: pH Measurement

Measurement of pH of simple solution (aq. Strong acid/ strong base or weak acid / weak base at different dilution), pH of extract fruits i.e. orange, lemon, grapes and vinegar

Unit 11: Thermochemistry

Heat capacity, Enthalpy of solution ,Enthalpy of neutralization for weak acid with strong base or weak base with strong acid ,Enthalpy of ionization