Outcomes of papers in Chemistry Syllabus

B.Sc. First Year

(Semester I)

Organic and Inorganic Chemistry Paper I

After completion of syllabus students will be able to understand following outcomes.

- Student should learn basic concept of organic chemistry, Nomenclature.
- Student get well acquainted with functional group in organic chemistry.
- To understand the basic concepts and differences aliphatic hydrocarbons.
- To know about term cycloalkane , cycloalkene and diene.
- Learn and practice about organic compounds with their names.
- Students learn some exceptional electronic configuration, trends and Periodicity in the following properties like atomic size, ionization energy, electron affinity & electronegativity.
- To understand the inert gases forms compounds, different fluoride compounds of xenon.

Physical and Inorganic Chemistry Paper II

- Learning and understanding rules of logarithm, Rules of drawing graph, Derivatives, Integration , different mathematical concept and SI units, and theiruse in solving numerical.
- Learning surface phenomena at heterogeneous surfaces.
- Student will learn the basic knowledge of gas phase, Kinetic molecular theory, critical phenomenon , liquefaction and molecular velocities.
- To impart knowledge about solid phase, crystallography and some crystal structure.
- General characteristics of s-block elements, oxides, hydroxide, carbonate &its complexes
- Study the oxidation and reduction by different methods**.**

(Semester II)

Organic and Inorganic Chemistry Paper III

- Student should learn the concept of aromatic hydrocarbons, Aromaticity and antiaromaticity.
- Student should understand the phenols and synthesis of phenols
- Student knows about the haloalkene and haloarenes compounds.
- To know the concepts of carboxylic acids and their derivatives.
- To know about the types of alcohols and reaction of epoxide.
- To study the different properties of P- block elements.
- To know the acids & Bases by different concepts.

Physical and Inorganic Chemistry Paper IV

- To impart knowledge of atomic structure, different theories of atomic structure, rules of electronic configuration and quantum numbers.
- Learning of properties of liquid phase as surface tension, Viscosity and parachor.
- Student will learn the basic knowledge of colloidal state, types, preparation, properties and applications of colloidal state.
- Learning and understanding of catalysis, types of catalysis and characteristics ofcatalyzed reactions.
- To understanding the chemical bond and its different types of bonds.
- Learning the Concept of hybridization and study of VSEPR & Molecular Orbital theory.

B.Sc. Second Year

(Semester III)

Organic and Inorganic Chemistry Paper VI

- Learn the mechanism of name reactions.
- Know the Synthesis, and Reactions of Aromatic Carboxylic and Sulphonic acids.
- Know the Synthesis, and Reactions of Organometallic compounds.
- Learn the synthesis, mechanism, applications of active methylene compounds.
- Gathering basic knowledge of Oils, Fats, Soaps and Detergents.
- Understand the basic principle and application of Qualitative Analysis.
- Know the Classification, Properties of Non- aqueous solvents.

Physical and Inorganic Chemistry Paper VII

- Write an expression of Davisson-Germer experiment.
- Derive Schrondinger wave equation.
- Understand De-Broglie's hypothesis and uncertainty principle.
- Solve the numerical problems based on De-Broglie.
- Understand concept of entropy.
- Understand statements of first, second and third law of thermodynamics.
- Know the meaning of phase, component and degree of freedom.
- Know the nuclear structure & different energy of nuclear.
- Understand the different steps & procedure in the gravimetric separation method.

(Semester IV)

Organic and Inorganic Chemistry Paper VIII

- Learn the stereoisomerism of Chiral compounds.
- Know the Classification, and Reactions of carbohydrates.
- Know the Synthesis, and Reactions of Nitrogen Compounds.
- Gathering applications of Reagents in Organic Synthesis.
- Understand the Characteristics of d-Block Elements.
- Know the Characteristics of d-Block Elements

Physical and Inorganic Chemistry Paper IX

- Know the rate constant and factors affecting rate of reactions.
- Write an expression for rate constant (K) for first order, second order reaction.
- Know the terms cell constant, specific conductivity, equivalent conductivity andmolar conductivity.
- Know the applications of Kohlrausch's law.
- Compare between thermal and photochemical reactions.
- Discuss different types of photochemical process.
- Know the preparation, properties, structure & application of different compounds.
- Discuss different inter halogen compounds by preparation, properties, structure and uses.

Organic and Inorganic Chemistry Practical paper X

- Learn basics of thin layer chromatography and distillation**.**
- Learn fundamentals of organic qualitative analysis.
- Learn about organic estimations.
- Basics of volumetric analysis.

Physical and Inorganic Chemistry Practical Paper XI

- Calculate normality and strength of the solution using potentiometer and conductivity meter.
- Find pka value on pH meter.
- Verify Lamberts-Beer's law colorimetrically and determine unknown concentration of the solution.
- Determine energy of activation.
- Determine heat of solution.
- Study the effect of solute on CST of phenol-water system.
- Determine the enthalpy of ionization of weak acid / weak base
- Determine partition coefficient.
- Separations of elements from each other & analysis by volumetric method.

B.Sc. Third Year

Organic and Inorganic Chemistry Paper XII

- Learn the mechanism of Electrophilic Substitution reaction of Heterocyclic Compounds
- Know the characteristics, Classification and synthesis of Drugs and Dyes
- Explaining theories of Color and chemical constitution of Dyes
- Gathering basic knowledge of Alkaloids, Vitamins and Pesticides
- Understand the basic principle and application of coordination complexes
- Know the application of elements in Medicine

Physical and Inorganic Chemistry Paper XIII

- Understand the concepts of molecular Spectroscopy and its applications2.Analyze Rotational, Vibrational and Raman, Spectra
- Interpret the theoretical and experimental methods of chemical kineticsKnow thetheory and application of Distribution law
- Explain the Nomenclature, classification and application of Organometallic Compounds
- Illustrate the classification and application of Metal Carbonyls

Organic & Inorganic Chemistry Paper-XIV

- To learn the basic principle and terms used in UV, IR & NMR Spectroscopy
- Acquire the fundamental knowledge of classification and Synthesis of Amino Acidand Peptides
- Describe the types of Rearrangement
- Postulates and limitations of VBT and CFT
- Calculation of CFSE for Tetrahedral and Octahedral Complexes
- Explain the types of electronic transition and selection rule
- Apply spectroscopic techniques in analyzing the structure of simple organic Molecules

Physical & Inorganic Chemistry Paper-XV

- Basic concepts of electrochemistry and its applications
- Understanding the Nernst heat theorem and the Thermodynamics open system
- Know the Vant-Hoff's Reaction isochore and numerical on it
- Explain the types of magnetic substances and effect of temperature on it
- Biological role of alkali and alkaline earth metal ions

- Describe the structures and functions of Metal Cluster

SEC III (Section-A) Computer Application in Chemistry OR Applied Analytical Techniques

- Able to know the use of software and Excel in Chemistry
- Grasp the concept of Quality Assurance and Quality Control
- Illustrate the Physical and Chemical analysis of Soil and fuel
- Be able to evaluate Biological activity and toxicity of organic compounds using software

SEC IV (Section-B) Spectroscopic Techniques and Cosmetic Preparation OR Basic Analytical Chemistry

- Be able to determine the structure by using Spectra
- To train the students for the preparation of various cosmetics
- Know the classification and Fatty acid composition of Oils and Fats.
- Analysis of Oils and Fats by physical and chemical method