



Programme Outcomes

Subject: Chemistry

F Y B Sc Programme Outcomes from 2018-19 to 2021-22

Student acquire knowledge Electrolytic conductance, Surface Chemistry, Mathematical Preparation in Chemistry, Graphical representation of equations, Derivative, Periodic properties, Atomic and ionic size Ionisation energy, Electron affinity, Electronegativity, S block element, Organic Chemistry, Hydrocarbons Alkanes, Alkenes, Alkynes, Haloalkanes and haloarenes, Alcohols, phenols and ethers, Ionic equilibria, VSEPR theory and shapes of covalent molecules, Physical Chemistry Experiments, Analytical Chemistry Experiments, Inorganic Qualitative Analysis, The Gaseous State, Liquid State, Second Law of Thermodynamics, Metals and metallurgy, P block elements, Aldehydes and ketones, Reactions of aliphatic aldehydes & Ketones, Aromatic aldehydes and ketones, Carboxylic acids and their derivatives, Amines, Volumetric analysis, Chemical bonding and structure, Physical Chemistry Experiments, Analytical Chemistry Experiments, Organic Qualitative Analysis

F Y B Sc Programme Outcomes from 2022-23 to 2023-24

Student acquire knowledge about Various theories and principles applied to reveal atomic structure. Nature of matter and experiments which confirmed it. Significance of quantum numbers. Apply the rules of logarithm for solving numerical in chemistry. Draw, calculate the slope of various graphs for chemistry experiments. Calculate derivative and integration of some simple functions especially related to chemical problems. The basics of kinetics theory and concepts therein. Factors causing the deviations from ideal behaviour of gases. Compressibility, liquification and related critical constants of a system. To know about the structure of atom. To acquire the knowledge about the arrangement of elements in a periodic table to familiar with the classification of elements in periodic table. To know about the principle involved in arrangements of electrons in atoms. To understand the shapes of different types of orbitals present in atoms. To understand the periodic law and systematic study of elements. To find the factors affecting periodic properties. To understand periodic properties and their general trends in groups and periods. (Atomic size, Ionization energy, Electron affinity, Electro negativity, Metallic properties). To correlate these periodic properties with the chemical behaviour of elements. To understand the different methods used to determine electronegativity. The properties of organic compounds. Different types of bonds and structures of organic compounds. Different types of structural effects and their effect on the strength of acids and bases. Fundamentals of organic reaction mechanism, structural isomerism, methods of purification of organic compounds. Different types of solvents used

in organic reactions. SP³, SP² and SP hybridizations. Nomenclature of alkanes, alkenes and alkynes. Different methods of preparation of alkanes, alkenes and alkynes. Different reactions of alkanes, alkenes and alkynes. To gain knowledge about origin of surface tension. To determine surface tension. To get idea regarding viscosity. To determine viscosity. To familiar with the Inorganic Qualitative Analysis. To understand the basic principles behind the group precipitation of basic radicals like solubility product and common ion effect. To understand the role of some compounds in qualitative analysis viz. Use of Cobalt nitrate, Sodium carbonate, Hydrogen sulphide and Ammonium chloride in detection of basic radicals. To focus on systematic separation and detection of ions in aqueous solutions.

SY B Sc Programme Outcomes from 2016-17 to 2018-19

Student acquire knowledge about Chemical Thermodynamics; Solutions Colligative Properties Electrochemistry Chemistry of Transition Elements The Metallic Bond The Metallurgy of Aluminium (Electrometallurgy) Chemistry of Lanthanoids Elements Chemistry of Actinoids Elements Molecular Orbital Theory (MOT) Stereoisomerism Amines Organometallic compounds Chemistry of Heterocyclic Compounds. Synthetic Reagents Elimination Reactions Introduction to Analytical Chemistry Volumetric (Titrimetric) Analysis Gravimetric analysis Chromatography Physical Chemistry Experiments Volumetric Analysis Chromatography Organic Preparations Inorganic Preparations

S Y B Sc Programme Outcomes from 2019-20 to 2022-23

Student acquire knowledge about Solutions Colligative Properties The d-block elements Stereoisomerism (L-12, M-24 / 36) Projection formulae, Optical isomerism Geometrical isomerism Conformational isomerism Stereochemistry of Cyclohexane Heterocyclic and polycyclic aromatic compounds, Electrochemistry Chemical Thermodynamics Basic concepts of coordination chemistry Synthetic Reagents Organometallic compounds Molecular Orbital Theory (MOT) Acid base titrations Precipitation titrations Chromatography Redox titrations Complexometric titrations Gravimetric analysis Physical Chemistry Experiments Volumetric Analysis Chromatography

T Y B Sc Programme Outcomes from 2017-18 to 2019-20

Student acquire knowledge about Electrochemical Cell and its Applications. Photochemistry Phase Rule Radioactivity and its Applications Investigation of Molecular Structure. Chemical kinetics Solid State Elementary Quantum Mechanics Basic concepts of coordination Chemistry Werner's coordination theory Modern Theories of M-L Bonds: V.B.T. Modern Theories of M-L Bonds: C.F.T. Modern Theories of M-L Bond - M.O.T. The Copper group Coinage Metals Solvents, Solutions, Acids and Bases. Corrosion and passivity Structure and Reactivity of Molecules. Some Transition and Inner Transition Elements. Structural Effects Nucleophilic Substitution at Saturated Carbon Electrophilic Addition to C=C, Nucleophilic Addition to C=O Aromatic Substitution Rearrangement reactions Spectroscopy Ultraviolet spectroscopy Infrared Spectroscopy NMR Spectroscopy Problems based on UV, IR and NMR Spectroscopy Designing Organic

Synthesis Natural products Solvent Extraction Ion Exchange Chromatography Size Exclusion Chromatography Gas chromatography High-performance Liquid Chromatography Electrophoresis-Spectrometry Emission Spectrometry Atomic Absorption Spectrophotometry Nephelometry and Turbidimetry Thermal Methods General Aspects of industrial Chemistry Sugar Industry Fermentation Industry Fertilizers Small Scale Industries Petroleum Industry Industrial Organic Synthesis from Petroleum Soaps and Detergents: Drugs and Pharmaceuticals: Dyes, Pigments and paints Carbohydrates Amino Acids and Proteins Enzymes Lipids Nucleic Acids Energy rich compounds (L6, M6) Metabolism (L12, M12) Environmental Chemistry Polymer Chemistry, Chemistry in Everyday Life

T Y B Sc Programme Outcomes from 2020-21 to 2022-23

After successful completion of this Programme, students are acquire the significance of wave function and postulates of quantum mechanics. half-life equations for first and second order reactions the principles of electrode processes and apply them during Practical's. Analyse the rotational spectra of diatomic molecules and determine the bond length. apply the radioactivity principles for various chemical and biological investigations. mechanism of fluorescence, phosphorescence and photochemical reactions. the given crystal structure and determine the indices of planes, interplanar distances and type of crystal structure. Learn about the VSEPR theory and how it can be used to explain molecular shapes. the VBT to describe the formation of covalent bonds in terms of atomic orbital overlap. stability of complexes using CFSE. about MOT to draw energy diagrams and to predict bond order. Learn about basic principles and synthesis of nanomaterials. classification, composition and processing of cement. classification and composition of alloys. types manufacture and applications of fertilizers. Students will learn organic reactions like nucleophilic substitution, electrophilic substitution, nucleophilic addition, electrophilic addition and elimination. able to write/ explain mechanisms of those types of reactions. how a reaction takes place in one or more steps. the types of intermediates formed in different reactions. learn how reagent attacks the substrate molecule and accordingly how bonds break and formed. learn how change in structure of substrate, reagent and solvent changes the product formed and its stereochemistry. able to predict the products and to suggest the mechanisms. Students will learn interaction of radiations with matter. They will understand different regions of electromagnetic radiations. They will know different wave parameters. learn principle of mass spectroscopy, its instrumentation and nature of mass spectrum. understand principle of UV spectroscopy and nature of UV spectrum. learn types of electronic excitations. able to calculate maximum wavelength for any conjugated system. And from the value of λ -max they will be able to find out extent of conjugation in the compound. understand principle of IR spectroscopy, types of vibrations and the nature of IR spectrum.



Patil
Head
Department of Chemistry
RFNS, Senior Science College,
Akkalkuwa Dist-Nandurbar

