RAYAT SHIKSHAN SANSTHA'S

SHREE SADGURU GANGAGEER MAHARAJ SCINCE, GAUTAM ARTS & SANJIVANI COMMERCE COLLEGE, KOPARGAON DIST AHMEDNAGAR

Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Chemistry

Program outcome : B.Sc. (Chemistry)	
PO1.	• Demonstrate, solve and an understanding of major concepts in all disciplines of chemistry.
PO2.	• Solve the problem and also think methodically, independently and draw a logical conclusion.
PO3.	• Employ critical thinking and the scientific knowledge to design, carry out, record and analyze the results of chemical reactions.
PO4.	• Create an awareness of the impact of chemistry on the environment, society, and development outside the scientific community.
PO5.	• Find out the green route for chemical reaction for sustainable development.
PO6.	• To inculcate the scientific temperament in the students and outside the scientific community.
PO7.	• Use modern techniques, decent equipments and Chemistry software's

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Chemistry

Program Specific outcome : B.Sc. (Chemistry)	
PSO1.	• Gain the knowledge of Chemistry through theory and practical's.
PSO2.	• To explain nomenclature, stereochemistry, structures, reactivity, and mechanism of the chemical reactions.
PSO3.	• Identify chemical formulae and solve numerical problems.
PSO4.	• Use modern chemical tools, Models, Chem-draw, Charts and Equipments
PSO5.	• Know structure-activity relationship.
PSO6.	• Understand good laboratory practices and safety.
PSO7.	• Develop research oriented skills.
PSO8.	• Make aware and handle the sophisticated instruments/equipments.

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Chemistry

Course Outcomes of B.Sc. (Chemistry)

Class	Course title	Outcome
F.Y.B.Sc. (Paper-I)	CH-101Physical chemistry	• Learn the thermodynamic principles, calculation of different types of energies Exergonic and Endergonic reaction, Gas equilibrium • Concept of PH of different salts, buffer solution, common ion effect
F.Y.B.Sc. (Paper-II)	CH-101 Organic chemistry	• To learn fundamentals principles and developments of organic chemistry • Learn the confirmation .cis –trans • Learn difference in alkane ,alkene and alkyne
F.Y.B.Sc. (Paper-III)	CH-103 Chemistry Practical	• Chemical safety and Lab safety • Determination of thermochemical parameters • Techniques of pH measurements , Preparation of buffer solutions • Elemental analysis of organic compounds, Chromatographic Techniques for separation of constituents of mixtures
F.Y.B.Sc. (Paper-I)	CH-201 Inorganic chemistry	• Various theories and principles of atomic structure • Origin of quantum mechanics , Schrodinger equation, Significance of quantum numbers, Shapes of orbitals • To learn periodic table ,properties trends • learn chemical bonding of different molecule
F.Y.B.Sc. (Paper-II)	CH-202 Analytical chemistry	• Introduction to Analytical Chemistry • Relation between molecular formula and empirical formula • Purification techniques for organic compounds. • Theoretical background for Paper and Thin Layer Chromatography • Applications of pH meter
F.Y.B.Sc. (Paper-III)	CH-203 Chemistry Practical	• Inorganic Estimations using volumetric analysis • Synthesis of Inorganic compounds • Analysis of commercial products • Purification of organic compounds. Preparations and mechanism of reactions involved

S.Y.B.Sc. (Paper-I)	CH-211 Physical & Analytical Chemistry	• Introduction to Analytical Chemistry, Chemical analysis and its applications, Sampling, Common techniques, Instrumental methods and other techniques, Choice of method. Basic principles in qualitative analysis , Meaning of common ion effect, Role of common ion effect and solubility product
S.Y.B.Sc. (Paper-II)	CH-212 Organic & Inorganic Chemistry	• In Organic Chemistry, Students learnt about the Stereochemistry, where they have dealt with chirality, optical activity and polarimetry, enantiomers, absolute configuration, R/S system nomenclature. In addition, they learnt about Baeyer strain theory and cyclohexane's conformations and geometrical isomerism. Also organic reaction and mechanism. Substitution and elimination reactions also have been studied. • (i) Definition of corrosion. ii) Types of corrosion. iii) Mechanism of corrosion. iv) Factors affecting corrosion. v) Methods of prevention of metal from corrosion. vi) Meaning of passivity. vii) Different theories of passivity. viii) Galvanising, Tinning
S.Y.B.Sc. (Paper III)	CH-221 Physical & Analytical Chemistry	• Meaning of equivalent weight, molecular weight, normality, molality, primary and secondary standards. Different way to express concentrations of the solution, Preparation of standard solution, Calibrate various apparatus such as burette, pipette, volumetric flask, barrel pipette etc. • Types instrument
S.Y.B.Sc. (Paper- IV)	CH-222 Organic & Inorganic Chemistry	• Learnt about oxidation and reduction concept. Catalytic hydrogenation were studied, where Birch reduction, Resenmund's reduction were studied.
S.Y.B.Sc. (Paper-V)	Practical Course in Chemistry CH – 223	• Verify theoretical principles experimentally • Interpret the experimental data • Improve analytical skills • Correlate the theory and experiments and understand their importance
T.Y.B.Sc. (Paper-I)	CH-331 Physical Chemistry	• Write an expression for rate constant K for third order reaction • Solve the numerical problems based on Rate constant • Understand the term specific volume, molar volume and molar refraction • Know the meaning of phase, component and degree of freedom • Derive the expression for rotational spectra for the transition from J to J+1

T.Y.B.Sc. (Paper-II)	CH-332 Inorganic Chemistry	• Know the meaning of various terms involved in co- ordination chemistry • To understand Werner's formulation of complexes and identify the types of valences • Know the limitations of VBT • Know the shapes of d-orbital's and degeneracy of d- orbital's • Draw the geometrical and optical isomerism of complexes
T.Y.B.Sc. (Paper-III)	CH-333 Organic Chemistry	• Define organic acids and bases. • Distinguish between geometrical and optical isomerism. • Discuss kinetics, mechanism and stereochemistry of SN1 and SN2 reactions. • Compare between E1 and E2 reactions. • Understand the evidences, reactivity and mechanism of various elimination and substitution reactions.
T.Y.B.Sc. (Paper- IV)	CH-334Analytical Chemistry	• Know the principles of common ion effect and solubility product. • Study the methods of thermo-gravimetric analysis. • Understand the principles of Spectro-photometric analysis and properties of electromagnetic radiations. • Study the Voltammetry and Polarography as an analytical tool. • Measure the absorbance of atoms by AAS.
T.Y.B.Sc. (Paper-V)	CH-335 Industrial Chemistry	• Know the importance of chemical industry. • Classify various insecticides. • Study the nutritive aspects of food constituents. • Understand the characteristics of some food starches. • Study the manufacture of cement, dyes, Glass, Soap and Detergents by modern methods.
T.Y.B.Sc. (Paper- VI)	CH-336-EEnvironmental Chemistry	• Know the role of environmental chemistry and its potential • Understand the basic concept of properties of soil & its classification on the basis of pH. • Know the different plant nutrients, their functions and deficiency symptoms. • Identify the problematic soil pollution, air, water pollution. • Have the knowledge of various pesticides, insecticides, fungicides and herbicides and their impact

T.Y.B.Sc. (Paper-I)	CH-331 Physical Chemistry	• Understand Mechanics of system of particles. • Know the Redox reaction. • Study the Nuclear Chemistry. • Solve the cell reaction and calculate EMF.. • Calculate interplanar distance. • Understand De-Broglie hypothesis and Uncertainty principle • Derive Schrodinger's time dependent and independent equations
T.Y.B.Sc. (Paper-II)	CH-332 Inorganic Chemistry	• Study the electronic configuration of lanthanides and actinides. • Get knowledge of Crystalline solid. • Understand different operation in stoichiometric molecule. • Study the Bio-inorganic chemistry. • Understand the p-type semiconductor and n-type semiconductor
T.Y.B.Sc. (Paper-III)	CH-333 Organic Chemistry	• To study UV, IR and NMR spectroscopy. • Discuss different types of rearrangement reactions. • Determine structure of compound by spectroscopic methods. • Understand the difference between carbocation and carbanion. • To study alkaloids, Ephedrine, citral molecule with their properties and application.
T.Y.B.Sc. (Paper- IV)	CH-334Analytical Chemistry	• Know the different analytical techniques. • To understand different types of separation techniques. • To study principle, construction and working of GC and HPLC. • To give an extended knowledge about chromatographic techniques used for separation of amino acids. • Discuss the problem based on distribution coefficient and extraction techniques.
T.Y.B.Sc. (Paper-V)	CH-335 Industrial Chemistry	• Know the various pharmaceutical drugs, their application and synthesis. • To study the waste management. • To understand the function of dyes, paints and pigments. • To study the various type of surfactants. • To know about molasses and bagasse. • To study the different types of polymer.

T.Y.B.Sc. (Paper- VI)	CH-336-EEnvironmental Chemistry	• Know the various environmental issuesand their solution. • To study the waste management. • To understand the function of chemicals and application of green chemistry. • To study the various type of surfactants. • To know natural sources of energy. • To study the different types of hazardous and toxic chemicals.
T.Y.B.Sc. (Paper- VII)	CH-347 Physical chemistry practical's	• Calculate molar and normal solution of various concentrations. • Determine specific rotations and percentage of optically active substances by polarimetrically. • Study the energy of activation and second order reaction. • Study the stability of complex ion and stranded free energy change and equilibrium constant by potentiometry. • Find out the acidity, Basicity and PKa Value on pH meter.
T.Y.B.Sc. (Paper- VIII)	CH-348Inorganic chemistry practical's	• Study the gravimetric and volumetric analysis of ores and alloy. • Prepare a various inorganic complex and determine its % purity. • To study binary mixture with removal of borate and phosphate. • To understand the chromatographic techniques
T.Y.B.Sc. (Paper- IX)	CH-349 Organic chemistry practical's	• Perform the Binary mixtures. • Preparation of organic compounds, their purifications and run TLC. • Determination of physical constant: Melting point, Boiling point. • Different separation techniques.