JAI HIND COLLEGE

Basantsing Institute of Science & J. T. Lalvani College of Commerce.
and Sheila Gopal Raheja College of Management.
Autonomous

Program Name: Bachelor of Science (B.Sc in Chemistry)

PROGRAM OBJECTIVES:

PO1: To make students aware about fundamental concepts in various branches of chemistry.

PO2: To inculcate the core concepts involved in chemistry.

PO3: To train them to develop critical thinking & problem-solving skills in core areas of chemistry.

PO4: To enhance analytical skills and apply for enhancement of employability.

PO5: To enhance students in scientific and communication skills by involving in different activities such as Discussion Clubs, Scientific writing, Projects etc.

PO6: To train them about the importance of chemical science and its application related to environmental and social context as a pursuit of lifelong learning.

PO7: To develop the ability to design experiments to solve problems related to chemistry and other multidisciplinary areas.

PO8: To inculcate the research aptitude, scientific thinking and ethical sensibilities.

PO9: To implement standard safety procedures & techniques commonly used in laboratories.

PO10: To enhance knowledge suitable methodologies in order to conduct chemical synthesis, analysis, characterization or other chemical investigation.

PO11: To aware students with the principles of green chemistry as a good laboratory practice for the betterment of society.

PO12: To sensitize them about modern technologies and instrumentations involved in recent developments in research and industries.

PO13: To inculcate knowledge appropriate chemical techniques relevant to academic, industrial, generic skills and global competencies.

PO14: To make them aware of laboratory skills in all major laboratory techniques and principles including instrumentation, synthesis, purification, analysis.

PO15: To train them to identify problems and generate hypotheses through various laboratory techniques & implement experimental methods to test hypotheses, and interpret the resulting data.

COURSE OUTCOMES:

CO1: Recall and discuss the fundamentals of thermodynamics.

CO2: Describe and illustrate the derivations to understand the spontaneity of reaction and predict the direction of movement of reaction based on the chemical potential.

CO3: Explain and appraise the concept of conducting solutions and the factors affecting conductivity.

CO4: Examine and solve the numericals based on thermodynamics and conductivity.

CO5: Classify and sketch the types of Electrochemical cells, Electrodes, cell notation and electrode potential.

CO6: Solve numericals based on EMF, Cell potential and feasibility of galvanic cells.

CO7: Define Laws of Photochemistry and quantum yield.

CO8: Identify the different types of reactions and processes involved in photochemistry.

CO9: Define basic terminology and fundamentals of spectrometry.

CO10: Distinguish between principles involved in various analytical instruments based on interactions.

CO11: Solve and Judge the Beer- Lambert’s law and its deviations.

CO12: Construct block diagrams for instrumentation of single and double beam Colorimeters and Spectrophotometers.

CO13: Illustrate the various states of matter, the theoretical principles governing each state, determination of physical parameters and their practical applications.

CO14: Determine different physical parameters and their practical applications.

CO15: Explain the theory of acids and bases and sparingly soluble salts.

CO16: Apply the theory of ionic equilibria for electrolytes.

CO17: Choose an appropriate experimentation method to determine the Surface tension and viscosity.

CO18: Differentiate between strong acids/bases and weak acids/bases in terms of ionization behaviour.

CO19: Create models of atoms, writing and balancing of chemical equations.

CO20: Explain the formation of chemical bonds, rules governing them, their types and the spatial arrangements leading to various molecular symmetries.

CO21: Explain the fundamentals of directional and non-directional bonding.

CO22: Evaluate the lattice energy using Born-haber cycle, Born-Lande's equation and Kapustinski equation.

CO23: Distinguish between various types of hybridization using valence bond theory.

CO24: Recognise wave mechanical treatment, LCAO-MO approach and interaction between two hydrogen atoms.

CO25: Construct Molecular orbital diagrams for Homo & Hetro diatomic species. 26. Recall trends in periodic properties of p-block chemistry.

CO27: Discuss and Examine trends in chemical reactivity such as acidic/basic behaviour of some representative oxides, hydroxides, halides and oxoacids of p-block.

CO28: State structure, bonding and properties of hydrides, oxides, oxoacids and halides of p block elements.

CO29: Describe synthesis of ammonia using Haber's process and sulphuric acid using Contact process.

CO30: Describe List terminology, types and tools used for titrimetric method of analysis.