

DEPARTMENT OF CHEMISTRY

Course Outcomes

Paper	Paper Name (Paper code)	Outcomes After completion of the course the student should be able to
SEMESTER I		
PAPER – I	Inorganic & Physical Chemistry (Theory)	CO 1 : Understand the basic concepts of p-block elements. CO 2 : To understand the concept of d-block, f-block elements and bonding between the metals CO 3 : To understand the compound from a molecular level to the crystal structure level CO 4 : To understand the difference between liquid and gaseous state in terms of intermolecular attractions. CO 5 : To know about the different types of solutions and the electrical properties of ions
		PRACTICAL • Understand the basic concepts of qualitative analysis of inorganic mixture. • Use glassware, equipment and chemicals and follow experimental procedures in the laboratory. • Apply the concepts of common ion effect, solubility product and concepts related to qualitative analysis.
SEMESTER II		
PAPER – II	Organic & General Chemistry (Theory)	CO 1 : To Understand the fundamental concepts of organic compound of alkanes and cycloalkanes. CO 2 : To recognise the basic properties and chemical behaviour of alkenes and alkynes CO 3 : To understand the concept of

		<p>Huckels rule to predict aromaticity and identify many organic reaction mechanisms</p> <p>CO 4 :To understand the concept of adsorption, colloidal stability, emulsions and different types of bonds in chemical bonding and shapes and geometries of various molecules by VBT,MO theories and the concept of hard and soft acids, bases.</p> <p>CO 5 :Learn and identify the stereo chemical properties of organic compounds and assigning R-S ,cis-trans and E-Z configurations to molecules.</p>
		<p>PRACTICAL</p> <ul style="list-style-type: none"> •Use glassware, equipment and chemicals and follow experimental procedures in the laboratory. •Understand explain the volumetric analysis based on fundamental concepts learnt in ionic equilibria. •Learn and identify the concepts of standard solutions, primary and secondary standards. •Facilitate the learner to make solutions of various molar concentrations. This may include: the concept of the mole; Converting moles to grams; Converting grams to moles; Defining concentration; Dilution of Solutions; Making different molar concentrations

SEMESTER III

PAPER – III	Organic chemistry & Spectroscopy (Theory)	<p>CO 1 :Understand the preparation, properties and reactions of halo alkanes, halo arenes and oxygen containing functional groups.</p> <p>CO 2 :To predict the products of the reactions of carbonyl compounds with different reagents.</p> <p>CO 3 :To know the preparation, properties of carboxylic acids and identify their derivatives as esters, amides, acid halides and anhydrides.</p> <p>CO 4 :To understand the electromagnetic spectrum and principles of spectroscopic methods such as NMR, IR, UV- Visible.</p> <p>CO 5 : To know the application of spectroscopic knowledge for structural</p>
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		<p>identification of simple organic molecules.their conservation</p> <p>PRACTICAL</p> <ul style="list-style-type: none"> •How to use glassware, equipment and chemicals and follow experimental procedures in the laboratory. •How to calculate limiting reagent, theoretical yield, and percent yield. •How to engage in safe laboratory practices by handling laboratory glassware, equipment, and chemical reagents appropriately. •How to dispose of chemicals in a safe and responsible manner •How to perform common laboratory techniques including reflux, distillation, recrystallization, vacuum filtration. •How to create and carry out work up and separation procedures. •How to critically evaluate data collected to determine the identity, purity, and percent yield of products and to summarize findings in writing in a clear and concise manner.
SEMESTER IV		
PAPER – IV:	Inorganic, Organic and Physical Chemistry (Theory)	<p>CO 1 :To know the chemical bond and the theories that explain the electronic properties within organo metallic compounds.</p> <p>CO 2 :To develop knowledge on chemical mechanism of carbohydrates.</p> <p>CO 3 :To know the importance of amino acids in the synthesis of body proteins and to provide the introduction about Hetero cyclic chemistry of five and six membered rings.</p> <p>CO 4 :To know the classification , structure and preparation of nitro hydrocarbons and amines .</p> <p>CO 5 :To learn about laws of absorption of light energy, quantum efficiency and mechanism of photochemical reactions.</p> <p>PRACTICAL</p> <ul style="list-style-type: none"> •Use glassware, equipment and

		<p>chemicals and follow experimental procedures in the laboratory.</p> <ul style="list-style-type: none"> • Determine melting and boiling points of organic compounds. • Understand the application of concepts of different organic reactions studied in theory part of organic chemistry.
PAPER – V:	Inorganic & Physical Chemistry (Theory)	<p>CO 1 :To know the properties of coordination compounds and relative valency bond theory, Molecular orbital theory and hybridisation.</p> <p>CO 2 :To understand the basic concepts of mechanism of inorganic reactions including the substitution reaction of the ligands and importance and geochemical effect on the distribution of various metals.</p> <p>CO 3 :To know the basic definitions and terms in phase diagrams and predicting the equilibrium relations of the phases.</p> <p>CO 4 :To understand the concept of electrochemical cells result in the conversion of chemical energy into electrical energy.</p> <p>CO 5 :To identify reaction order and determining rate law of a chemical change based on experimental data.</p>
		<p>PRACTICAL</p> <ul style="list-style-type: none"> • Use glassware, equipment and chemicals and follow experimental procedures in the laboratory. • Apply concepts of electrochemistry in experiments. • Be familiar with electro analytical methods and techniques in analytical chemistry which study and analyte by measuring the potential (volts) and/or current (amperes) in an electrochemical cell containing the analyte.
SEMESTER V		
PAPER – VI(A)	Synthetic organic chemistry	<p>CO 1 :To acquire knowledge on the basic concepts in different types of pericyclic reactions.</p> <p>CO 2 :To understand the concept of Jablonski-diagram, Norrish type 1 and type 2 reactions .</p> <p>CO 3 :To understand the importance of</p>

		<p>retro synthesis in organic chemistry . CO 4: To understand the applications of different reactions in synthetic organic chemistry. CO 4 :To identify the importance of reagents used in the synthesis of organic chemistry..</p>
		<p>PRACTICAL</p> <ul style="list-style-type: none"> • Perform the organic qualitative analysis for the detection of N, S and halogens using the green procedure. • Learn the procedure for the separation of mixture of organic acids using paper Chromatography. • Prepare the TLC plates for TLC chromatography. • Acquire skills in conducting column chromatography for the separation of dyes in the given mixture
<p>PAPER – VII(A)</p>	<p>Analysis of organic compounds</p>	<p>CO 1 :To identify the importance of mass spectrometry in the structural elucidation of organic compounds. CO 2 :To acquire the knowledge on structural elucidation of organic compounds using IR,NMR and Mass spectral data. CO 3 : To acquire the knowledge on structural elucidation of organic compounds Phenyl acetylene, P- nitro aniline CO 4 : To understand about the concept of solvent extraction for the separation of organic compounds and various chromatographic methods CO 5 :To understand about various chromatographic methods in the separation and identification of organic compounds.</p>
		<p>PRACTICAL</p> <ul style="list-style-type: none"> • Prepare acetanilide using the green synthesis. • Demonstrate the preparation of azodye. • Acquire skills in the separation of organic compounds in the given mixture using solvent extraction