



EVALUATION SCHEME

Theory

S.No.	TITLE	Marks
1	Solutions	7
2	Electrochemistry	9
3	Chemical Kinetics	7
4	d- and f-Block Elements	7
5	Coordination Compounds	7
6	Haloalkenes and Haloarenes	6
7	Alcohols, Phenols and Ethers	6
8	Aldehydes, Ketones and Carboxylic acids	8
9	Amines	6
10	Biomolecules	7
	TOTAL	70

UNIT	MONTH	LEARNING OUTCOMES	PRACTICAL AND COMPETENCY SKILL BASED ACTIVITIES / EXPERIENTIAL LEARNING	Skills	ASSESSMENT
Unit I: Solutions	April	Students will be able to <ul style="list-style-type: none">Describe the types of solutionsDerive the expression of concentration of solutions of solids in liquids, solubility of gases in liquids, solid solutionsElaborate Raoult's lawCategorise and derive the colligative properties -relative lowering of vapour pressure, elevation of boiling point, depression of freezing point, osmotic pressureDetermine the molecular masses using colligative properties.Define the abnormal molecular masses and Van't Hoff factor	Determination of concentration/ molarity of KMnO_4 solution by titrating it against a standard solution of: <ul style="list-style-type: none">i) Oxalic acid,ii) Ferrous Ammonium Sulphate (Students will be required to prepare standard solutions by weighing themselves).	Cognitive skills: Critical thinking, problem solving, observation and analysis, research skills Practical and technical skills: Experimentation, use of tools and technology, data recordings Communication skills: Scientific communication Emotional and social development: Curiosity and	Diagram based analysis. Pen paper test Solving Numerical

				<p>exploration, patience and perseverance</p> <p>Academic and career readiness: Scientific literacy, interdisciplinary learning, preparation for STEM careers</p>	
Unit II: Electro - chemistry	May	<p>Students will be able to</p> <ul style="list-style-type: none"> ● Define Redox reactions, EMF of a cell, standard electrode potential ● Derive the Nernst equation and write its application to chemical cells ● Relate Gibbs energy change and EMF of a cell ● Define conductance in electrolytic solutions, specific and molar conductivity ● Know the variations of conductivity with concentration, Kohlrausch's Law, electrolysis. ● Define the working and functioning of dry cell-electrolytic cells and Galvanic cells, lead accumulator and fuel cells ● Study the mechanism of corrosion 	<p>Scientific investigations involving laboratory testing and collecting information from other sources.</p> <p>A few suggested Projects.</p> <p>*To Study the presence of oxalate ions in guava fruit at different stages of ripening.</p> <p>*To Study the quantity of casein present in different samples of milk.</p> <p>*Preparation of soyabean milk and its comparison with the natural milk with respect to curd formation, effect of temperature, etc.</p> <p>*Study of the effect of Potassium Bisulphate as food preservative under various conditions (temperature, concentration, time, etc.)</p> <p>*Study of digestion of starch by salivary amylase and effect of pH and temperature on it.</p> <p>*Comparative study of the rate of fermentation of following materials: wheat flour, gram flour, potato juice, carrot juice, etc.</p> <p>*Extraction of essential oils present in Saunf (aniseed), Ajwain (carum), Illaichi (cardamom).</p> <p>*Study of common food adulterants in fat, oil, butter, sugar, turmeric powder, chili powder and pepper.</p>	<p>Cognitive skills: Critical thinking, problem solving, observation and analysis, research skills</p> <p>Practical and technical skills: Experimentation, use of tools and technology, data recordings</p> <p>Communication skills: Scientific communication</p> <p>Emotional and social development: Curiosity and exploration, patience and perseverance</p> <p>Academic and career readiness: Scientific literacy, interdisciplinary learning, preparation for STEM careers</p>	<p>Logical reasoning. Conceptual questions. SA/VSA questions pen paper test.</p>

Unit III: Chemical Kinetics	May-June	<p>Students will be able to</p> <ul style="list-style-type: none"> • Write expression for Rate of a reaction (Average and instantaneous) • Categorise factors affecting rate of reaction: concentration, temperature, catalyst; • Deduce the order and molecularity of a reaction, • Define the rate law and specific rate constant, • Write the integrated rate equations and half-life (only for zero and first order reactions). • Define the concept of collision theory and activation energy • Write and solve the numericals based on arrhenius equation 		<p>Cognitive skills: Critical thinking, problem solving, observation and analysis, research skills</p> <p>Communication skills: Scientific communication</p> <p>Emotional and social development: Curiosity and exploration, patience and perseverance</p> <p>Academic and career readiness: Scientific literacy, interdisciplinary learning, preparation for STEM careers</p>	<p>MCQ. Numerical solving skills. Pen paper test.</p>
Unit IV: d and f Block Elements	July	<p>Students will be able to</p> <ul style="list-style-type: none"> • Define the general , electronic configuration, occurrence and characteristics of transition metals • Know the general trends in properties of the first row transition metals metallic character, ionization enthalpy, oxidation states, ionic radii, colour, catalytic property, magnetic properties, interstitial compounds, alloy formation. • Define Lanthanoids -Electronic configuration, oxidation states and lanthanoid contraction and its consequences. • Define Actinoids -Electronic configuration, oxidation states and comparison with lanthanoids. • Properties of $K_2Cr_2O_7$ and $KMnO_4$ 	<p>Qualitative analysis Determination of one cation and one anion in a given salt. Cation - Pb^{2+}, Cu^{2+}, As^{3+}, Al^{3+}, Fe^{3+}, Mn^{2+}, Zn^{2+}, Cu^{2+}, Co^{2+}, Ni^{2+}, Ca^{2+}, Sr^{2+}, Ba^{2+}, Mg^{2+}, NH_4^+.</p> <p>Anions - S^{2-}, SO_4^{2-}, NO_3^-, CO_3^{2-}, Br^-, Cl^-, I^-, PO_4^{3-}, $CHCOO^-$, $C_2O_4^{2-}$. PROJECT</p>	<p>Cognitive skills: Critical thinking, problem solving, observation and analysis, research skills</p> <p>Practical and technical skills: Experimentation,use of tools and technology,data recordings</p> <p>Communication skills: Scientific communication</p> <p>Emotional and social development: Curiosity and exploration, patience and perseverance</p> <p>Academic and career readiness: Scientific literacy, interdisciplinary learning, preparation for STEM careers</p>	<p>Equation based. Logical reasoning based questions. Conceptual questions.</p>

Unit V: Coordination Compounds	July	<p>Students will be able to</p> <ul style="list-style-type: none"> Define ligands, coordination number, colour, magnetic properties and shapes, Write the IUPAC names of mononuclear coordination compounds. Define the Werner's theory, VBT, and CFT. Draw the structure and stereoisomerism and Define the importance of coordination compounds (in qualitative analysis, extraction of metals and biological system). 	<p>Preparation of Inorganic Compounds Preparation of double salt of Ferrous Ammonium Sulphate or Potash Alum. Preparation of Potassium Ferric Oxalate.</p>	<p>Cognitive skills: Critical thinking, problem solving, observation and analysis, research skills</p> <p>Practical and technical skills: Experimentation, use of tools and technology, data recordings</p> <p>Communication skills: Scientific communication</p> <p>Emotional and social development: Curiosity and exploration, patience and perseverance</p> <p>Academic and career readiness: Scientific literacy, interdisciplinary learning, preparation for STEM careers</p>	<p>MCQ. Logical reasoning based questions. Conceptual questions. Pen paper test</p>
Unit VI: Haloalkanes and Haloarenes.	August	<p>Haloalkanes: Students will be able to</p> <ul style="list-style-type: none"> Name and Define the nature of C–X bond, physical and chemical properties Define the optical rotation mechanism of substitution reactions. <p>Haloarenes:</p> <ul style="list-style-type: none"> Know the nature of C–X bond Define the substitution reactions (Directive influence of halogen in monosubstituted compounds only). Define the Uses and environmental effects of - dichloromethane, trichloromethane, tetrachloromethane, iodoform, freons, DDT. 		<p>Cognitive skills: Critical thinking, problem solving, observation and analysis, research skills</p> <p>Practical and technical skills: Experimentation, use of tools and technology, data recordings</p> <p>Communication skills: Scientific communication</p> <p>Emotional and social development: Curiosity and exploration, patience and perseverance</p> <p>Academic and career readiness: Scientific literacy, interdisciplinary learning, preparation for STEM careers</p>	<p>Equation based worksheet. MCQ. Logical reasoning based questions. Conceptual questions.</p>

Unit VII: Alcohols, Phenols and Ethers	August	<p>Alcohols:</p> <ul style="list-style-type: none"> Define the methods of preparation, physical and chemical properties (of primary alcohols only) Identify of primary, secondary and tertiary alcohols Know the mechanism of dehydration, uses with special reference to methanol and ethanol. <p>Phenols:</p> <ul style="list-style-type: none"> Define the methods of preparation, physical and chemical properties, acidic nature of phenol, electrophilic substitution reactions, uses of phenols. <p>Ethers: Define the methods of preparation, physical and chemical properties, uses.</p>	<p>Tests for the functional groups present in organic compounds: Unsaturation, alcoholic, phenolic, aldehydic, ketonic, carboxylic and amino (Primary) groups.</p> <p>Characteristic tests of carbohydrates, fats and proteins in pure samples and their detection in given food stuffs.</p>	<p>Cognitive skills: Critical thinking, problem solving, observation and analysis, research skills</p> <p>Practical and technical skills: Experimentation, use of tools and technology, data recordings</p> <p>Communication skills: Scientific communication</p> <p>Emotional and social development: Curiosity and exploration, patience and perseverance</p> <p>Academic and career readiness: Scientific literacy, interdisciplinary learning, preparation for STEM careers</p>	<p>Equation based worksheet. MCQ. Logical reasoning based questions. Conceptual questions. Pen paper test</p>
Unit VIII: Aldehydes, Ketones and Carboxylic Acids	September	<p>Aldehydes and Ketones:</p> <ul style="list-style-type: none"> Students will be able to Define the nomenclature, nature of carbonyl group, methods of preparation, physical and chemical properties Write the mechanism of nucleophilic addition, reactivity of alpha hydrogen in aldehydes, uses. <p>Carboxylic Acids: Students will be able to</p> <ul style="list-style-type: none"> Define the acidic nature, methods of preparation, physical and chemical properties, uses. 		<p>Cognitive skills: Critical thinking, problem solving, observation and analysis, research skills</p> <p>Practical and technical skills: Experimentation, use of tools and technology, data recordings</p> <p>Communication skills: Scientific communication</p> <p>Emotional and social development: Curiosity and exploration, patience and perseverance</p> <p>Academic and career readiness: Scientific literacy, interdisciplinary learning, preparation for STEM careers</p>	<p>Equation based worksheet. MCQ. Logical reasoning based questions. Conceptual questions. Pen paper test</p>

Unit IX: Amines	October	Amines: Students will be able to <ul style="list-style-type: none"> Define the Nomenclature, classification, structure, methods of preparation, physical and chemical properties, uses Identify primary, secondary and tertiary amines. Define Diazonium salts, Preparation, chemical reactions and importance in synthetic organic chemistry. 		Cognitive skills: Critical thinking, problem solving, observation and analysis, research skills Communication skills: Scientific communication Emotional and social development: Curiosity and exploration. Academic and career readiness: Scientific literacy	Equation based worksheet. MCQ. Logical reasoning based questions. Conceptual questions.
Unit X: Biomolecules	November-December	Carbohydrates Students will be able to <ul style="list-style-type: none"> Classify (aldoses and ketoses), monosaccharides (glucose and fructose) Specify D-L configuration for oligosaccharides (sucrose, lactose, maltose), polysaccharides (starch, cellulose, glycogen) Study the Importance of carbohydrates. Proteins <ul style="list-style-type: none"> Have an elementary idea of -amino acids, peptide bond, polypeptides, proteins Draw the structure of proteins primary, secondary, tertiary structure and quaternary structures (qualitative idea only) Define Denaturation of proteins. Define enzymes and Hormones - Elementary idea Classify and write the functions of vitamins. Define Nucleic Acids: DNA and RNA 		Cognitive skills: Critical thinking, problem solving, observation and analysis, research skills Practical and technical skills: Experimentation, use of tools and technology, data recordings Communication skills: Scientific communication Emotional and social development: Curiosity and exploration, patience and perseverance Academic and career readiness: Scientific literacy, interdisciplinary learning, preparation for STEM careers	Conceptual questions to enhance their reasoning and structural skill.

Practical Evaluation Scheme:

S.No.	Practical	Marks
1	Volumetric Analysis	08
2	Salt Analysis	08
3	Content Based Experiment	06
4	Project Work	04
5	Class record and viva	04
	Total	30