HAPPY DAYS SCHOOL, SHIVPURI (M.P.)

DEPARTMENT OF SCIENCE

CLASS: XI

Session – 2026-27

MONTH	CHAPTER	EXPECTED LEARNING OUTCOMES	PEDAGOGICAL APPROACH (TEACHING METHODS/ STRATEGIES)	ASSESSMENT TOOLS	RUBRICS	ART INTEGRATION	ICT INTEGRATION
JULY	Some Basic Concepts of Chemistry	General Introduction: Importance and Scope of Chemistry. Nature of matter, Chemical classification of matter, laws of chemical combination, Dalton's atomic theory: concept of elements, atoms and molecules. Atomic and molecular masses, mole concept and molar mass, percentage composition, empirical and molecular formula, chemical reactions, stoichiometry and calculations based on stoichiometry.	Constructivist Approach, Inquiry based approach,	Class room discussion, Question answer, Peer Learning Lab Activity	Scientific Approach, Performance, Accuracy	Flowchart of Matter classification Flowchart of mole concept	Flip class
	Structure Of Atom	Discovery of Electron, Proton and Neutron, atomic number, isotopes and isobars. Thomson's model and its limitations. Rutherford's model and its limitations, Bohr's model and its limitations, concept of shells and subshells, dual nature of matter and light, de Broglie's relationship, Heisenberg uncertainty principle, concept of orbitals, quantum numbers, shapes of s, p and d orbitals, rules for filling electrons in orbitals - Aufbau principle, Pauli's exclusion principle and Hund's rule, electronic configuration of atoms, stability of half-filled and completely filled orbitals.	Constructivist Approach, Inquiry based approach,	Class room discussion, Question answer session Problem Based Learning Lab Activity	Scientific Approach, Performance, Accuracy	Model of atom, Diagrams of various atomic orbitals	

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AUGUST	Classification of Elements and Periodicity in Properties	Significance of classification, brief history of the development of periodic table, modern periodic law and the present form of periodic table, periodic trends in properties of elements -atomic radii, ionic radii, inert gas radii, Ionization enthalpy, electron gain enthalpy, electronegativity, valency. Nomenclature of elements with atomic number greater than 100.	Constructivist Approach Inquiry based approach,	Class room discussion, Question answer session Problem Based Learning Lab Activity	Scientific Approach, Performance	Make a chart of periodic table	Flip class
	Chemical Bonding	Valence electrons are key in forming ionic and covalent bonds. Important concepts include Lewis's structure, bond parameters, resonance, VSEPR theory, hybridization, and the geometry of molecules, including hydrogen bonds.	Constructivist Approach Inquiry based approach,	Class room discussion, Question answer session Problem Based Learning Lab Activity	Scientific Approach, Performance, Accuracy, Time management	Flowchart of overlapping and hybridisation	
	FIRST PERIODIC ASSESSMENT						
SEPTEMBER	Chemical Thermodynamics	Concepts of systems, surroundings, work, heat, energy, extensive and intensive properties, and state functions. It discusses the first law of thermodynamics, including internal energy, enthalpy, heat capacities, and Hess's law. It briefly introduces the second and third laws of thermodynamics.	Constructivist Approach Inquiry based approach,	Class room discussion, Question answer session Problem Based Learning Lab Activity	Scientific Approach, Performance Accuracy, Time management	Flowchart of spontaneity of reaction	Flip Class
OCTOBER	**MID TERM EXAMINATION**						

	Equilibrium	Equilibrium in physical and chemical processes, dynamic nature of equilibrium, law of mass action, equilibrium constant, factors affecting equilibrium - Le Chatelier's principle, ionic equilibrium- ionization of acids and bases, strong and weak electrolytes, degree of ionization, ionization of poly basic acids, acid strength, concept of pH, hydrolysis of salts (elementary idea), buffer solution, Henderson Equation, solubility product, common ion effect (with illustrative examples	Constructivist Approach Inquiry based approach	Class room discussion, Question answer session Problem Based Learning Lab Activity	Scientific Approach, performance Accuracy Time management		Flip Class
NOVEMBER	Organic Chemistry - Some Basic Principles and Techniques	General introduction, methods of purification, qualitative and quantitative analysis, classification and IUPAC nomenclature of organic compounds. Electronic displacements in a covalent bond: inductive effect, electrometric effect, resonance and hyper conjugation. Fission of a covalent bond: free radicals, carbocations, carbanions, electrophiles and nucleophiles, types of organic Reactions.	Constructivist Approach Inquiry based approach,	Class room discussion Concept mapping, Problem based learning, Lab Activity	Scientific Approach, Performance, Accuracy, Time management	Isomeric structure of compounds Structure of reaction intermediate	
	SECOND PERIODIC ASSESMENT						

DECEMBER	Hydrocarbon	Alkane Nomenclature, isomerism, conformation (ethane only), physical properties, chemical reactions including free radical mechanism of halogenation, combustion and pyrolysis. Alkenes - Nomenclature, the structure of double bond (ethene), geometrical isomerism, physical properties, methods of preparation, chemical reactions: addition of hydrogen, halogen, water, hydrogen halides (Markovnikov's addition and peroxide effect), ozonolysis, oxidation, mechanism of electrophilic addition. Alkynes - Nomenclature, the structure of triple bond (ethyne), physical properties, methods of preparation, chemical reactions: acidic character of alkynes, addition reaction of - hydrogen, halogens, hydrogen halides and water.	Constructivist Approach Inquiry based approach	Class room discussion, Concept mapping, Problem based learning, Lab Activity	Scientific Approach, Performance, Accuracy Relevant to topic	Structure of compounds	
JANURARY 27	Redox Reactions	Redox Reactions Concept of oxidation and reduction, redox reactions, oxidation number, balancing redox reactions, in terms of loss and gain of electrons and change in oxidation number, applications of redox reactions.	Constructivist Approach Inquiry based approach,	Class room discussion, Concept mapping, Problem based learning, Lab Activity	Scientific Approach, Performance, Accuracy Relevant to topic,	Structure of cells	
FEB. 27	**Revision**						
	FINAL PRACTICAL EXAMINATION **ANNUAL EXAMINATION**						

SIGNATURE OF HOD _____
[MANISHA MAHINDRA]

SIGNATURE OF PRINCIPAL_____
[ANJU SHARMA]

HAPPY DAYS SCHOOL, SHIVPURI (M.P.)

DEPARTMENT OF SCIENCE

CLASS: XII

Session – 2026-27

MONTH	CHAPTER	EXPECTED LEARNING OUTCOMES	PEDAGOGICAL APPROACH (TEACHING METHODS/ STRATEGIES)	ASSESSMENT TOOLS	RUBRICS	ART INTEGRATION	ICT INTEGRATION
APRIL	Solution	Types of solutions, expression of concentration of solutions of solids in liquids, solubility of gases in liquids, solid solutions, Raoult's law, colligative properties - relative lowering of vapour pressure, elevation of boiling point, depression of freezing point, osmotic pressure, determination of molecular masses using colligative properties, abnormal molecular mass, Van't Hoff factor	Constructivist Approach Inquiry based Peer-led learning	Question Answer, MCQs, Problem Based Learning, Lab. Activity,	Scientific approach, Performance Accuracy	Graph of various phenomenon Worksheet test	
	Electrochemistry	Redox reactions, Difference between electrochemical and electrolytic cell, EMF of a cell, standard electrode potential, Nernst equation and its application to chemical cells, Relation between Gibbs energy change and EMF of a cell, conductance in electrolytic solutions, specific and molar conductivity, variations of conductivity with concentration, Kohlrausch's Law, electrolysis and law of electrolysis (elementary idea), dry cell-electrolytic cells and Galvanic cells, lead accumulator, fuel cells, corrosion.	Constructivist Approach ,	Question Answer,	Scientific approach,	Model of electrochemical cell and battery. (in laboratory)	some fuel cell and inverter battery showing by ppt

JULY	Chemical Kinetics,	Rate of a reaction (Average and instantaneous), factors affecting rate of reaction: concentration, temperature, catalyst; order and molecularity of a reaction, rate law and specific rate constant, integrated rate equations and half-life (only for zero and first order reactions), concept of collision theory (elementary idea, no mathematical treatment), activation energy, Arrhenius equation.	Constructivist Approach Inquiry based	Question answer session, MCQs, Problem Based Learning, Lab Activity,	Scientific Approach, Performance, Accuracy	Rate determination activity in lab	Flipped Class
	d and f Block Elements	General introduction, electronic configuration, occurrence and characteristics of transition metals, 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, preparation and properties of $K_2Cr_2O_7$ and $KMnO_4$. Lanthanoids – Electronic configuration, oxidation states, chemical reactivity and lanthanoid contraction and its consequences. Actinoids - Electronic configuration, oxidation states and comparison with lanthanoids.	Constructivist Approach	Question answer session, MCQs,	Scientific Approach, Performance		Flipped class
AUGUST	**FIRST PERIODIC ASSESSMENT**						
	Coordination Compounds	Coordination compounds - introduction, ligands, coordination number, colour, magnetic properties and shapes, IUPAC nomenclature of coordination compounds. Bonding, Werner's theory, VBT, and CFT; structure and stereoisomerism, the importance of coordination compounds (in qualitative analysis, extraction of metals and biological system)..	Constructivist Approach Inquiry based	Question answer session MCQs	Scientific Approach, Performance, Accuracy	Structure of different compound.	Flip class

	Haloalkanes and Haloarenes	**Halo alkanes:** Nomenclature, nature of C–X bond, physical and chemical properties, optical rotation mechanism of substitution reactions. **Haloarenes:** Nature of C–X bond, substitution reactions (Directive influence of halogen in monosubstituted compounds only). Uses and environmental effects of - dichloromethane, trichloromethane, tetrachloromethane, iodoform, freons, DDT.	Constructivist Approach Inquiry based	Question answer session Problem Based Learning MCQs Lab. Activity	Scientific Approach, Performance, Accuracy	Structure of Resonating structure Flowchart of Name reactions	
SEPTEMBER	Alcohol, phenol and Ether	Alcohols: Nomenclature, methods of preparation, physical and chemical properties (of primary alcohols only), identification of primary, secondary and tertiary alcohols, mechanism of dehydration, uses with special reference to methanol and ethanol. Phenols: Nomenclature, methods of preparation, physical and chemical properties, acidic nature of phenol, electrophilic substitution reactions, uses of phenols.	Constructivist Approach Inquiry based	Question answer session, MCQs, Concept mapping Lab. Activity Problem Based Learning	Scientific Approach, Performance, Accuracy	Structure Resonating structure Road-map	
OCTOBER	**MID TERM EXAMINATION**						
	Aldehydes, Ketones and carboxylic Acids	Aldehydes and Ketones: Nomenclature, nature of carbonyl group, methods of preparation, physical and chemical properties, mechanism of nucleophilic addition, reactivity of alpha hydrogen in aldehydes, uses.	Constructivist Approach Inquiry based	Question answer session, MCQs, Lab. Activity	Scientific Approach, Performance, Accuracy	Resonating Structure of different compounds	

	Organic compounds containing nitrogen	Amines: Nomenclature, classification, structure, methods of preparation, physical and chemical properties, uses, identification of primary, secondary and tertiary amines. Diazonium salts: Preparation, chemical reactions and importance in synthetic organic chemistry.	Constructivist Approach Inquiry based	Question answer session, MCQs, Problem Based Learning, Lab. Activity	Scientific Approach, Performance, Accuracy Relevant to topic, Content	Preparation of an organic compound	
NOVEMBER	Biomolecule	Carbohydrates are classified into aldoses and ketoses, with examples including monosaccharides like glucose and fructose, oligosaccharides such as sucrose, lactose, and maltose, and polysaccharides like starch, cellulose, and glycogen. They are important for various biological functions. Proteins consist of amino acids linked by peptide bonds, forming polypeptides and proteins with primary, secondary, tertiary, and quaternary structures. Concepts of protein denaturation and enzymes are introduced. Hormones and vitamins are briefly discussed, focusing on their classification and functions. Nucleic acids, specifically DNA and RNA, are also mentioned.	Constructivist Approach Inquiry based	Question answer session, MCQs, Lab. Activity Report Writing G.D. (Lets Speak)	Scientific Approach, Performance, Accuracy Relevant to topic, Leadership, Involvement, Time management		Flipped class
DEC	**1ST PRE BOARD EXAMINATION**						
JAN 27	**2ND PRE BOARD EXAMINATION** **PRACTICAL EXAMINATION**						
FEB. & MAR 27	**FINAL EXAMINATION**						

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