

CHEMISTRY (043)				
MONTH	CHAPTER	PEDAGOGY TOOL USED	E-CONTENT	LEARNING OUTCOMES
APRIL	Unit 1: Some Basic Concepts of Chemistry General Introduction: Importance and scope of Chemistry, Nature 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	-Brainstorming -Concept mapping	https://youtu.be/zMCFiHSWd0M?si=iSlr-zEBJ6V2IZ3m	The student Will be able to • Understand importance of chemistry • Know physical & chemical properties • Learn laws of chemical combination • Use SI units correctly • Apply significant figures • Understand mole concept • Do molar mass calculations • Find percentage composition • Write empirical & molecular formula • Solve basic stoichiometry problems
MAY	Unit 2: 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.	-Concept mapping -questioning Technique	https://youtu.be/QDNFkwFuWSs?si=23uTRMtv03Up2GUj	• Understand atomic models (Thomson, Rutherford, Bohr) • Know dual nature of matter (wave + particle) • Understand de Broglie equation • Learn Heisenberg uncertainty principle • Know quantum numbers • Understand atomic orbitals (s, p, d, f) • Write electronic configuration of atoms • Apply Aufbau principle, Pauli exclusion & Hund's rule • Understand shapes of orbitals

JUNE	SUMMER VACATIONS			
July	Unit 3: 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, valiancy, Nomenclature of elements with atomic number greater than 100	- Periodic Table -Comparative Analysis	https://youtu.be/y23QH5etddQ?si=Nf_yoyuLwjc6VXsk	• Understand need for classification of elements • Know modern periodic table and its features • Learn periodic trends (atomic size, ionization energy, electron affinity, electronegativity) • Understand periodicity in properties of elements • Know valency and oxidation states • Understand blocks of periodic table (s, p, d, f) • Compare properties across periods and groups
	Unit4: Chemical Bonding and Molecular Structure Valence electrons, ionic bond, covalent bond, bond parameters, Lewis structure, polar character of covalent bond, covalent character of ionic bond, valence bond theory, resonance, geometry of covalent molecules, VSEPR theory, concept of hybridization, involving s, p and d orbitals and shapes of some simple molecules, molecular orbital theory of homonuclear diatomic molecules (qualitative idea only), Hydrogen bond.	-Demonstration -Problem solving technique	https://youtu.be/HL-TZvbdDOY?si=Z5P7MLWCf99VtuUj	• Understand types of chemical bonds (ionic, covalent, coordinate) • Know octet rule and its limitations • Understand formation of ionic and covalent bonds • Learn Lewis dot structures • Understand VSEPR theory and shape of molecules • Know hybridization (sp, sp², sp³) • Understand polarity of bonds and molecules
August	Unit 7: 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.	-Demonstration -Inquiry based	https://youtu.be/vfsyZ87S9zk?si=WLSZxMia8PWsmGbY	• Understand oxidation and reduction concepts • Identify oxidizing and reducing agents • Learn oxidation number rules • Calculate oxidation states in compounds • Balance redox reactions (oxidation number & ion-electron