

ACADEMIC PLAN : 2023-24  
CARMEL CONVENT SR SEC SCHOOL, RATANPUR, BHOPAL.

SUBJECT: CHEMISTRY

STD: XI

| Month / No of Working Days | Name of the Unit / Chapter/Topic  | Learning Outcomes   | Suggested Activities/ Projects under Internal Assessment/PRACTICALS | Assignment   | Assessment            |
|----------------------------|---|---|---|--|-----------------------|
| APRIL                      | <p><b>CHAPTER-1</b><br/><b>Some Basic Concepts of Chemistry</b><br/>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</p> <p><b>CHAPTER-2</b><br/><b>Structure of atom</b><br/>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.</p> | <p>Student will be able to-</p> <ol style="list-style-type: none"> <li>1. Use the scientific method to create, test, and evaluate a hypothesis.</li> <li>2. determine the molar mass of an unknown non-electrolyte and an unknown electrolyte</li> <li>4. Students will gain an understanding of the fundamental properties of atoms, molecules, and the various states of matter</li> </ol> <p>Students will be able to-</p> <ol style="list-style-type: none"> <li>1. write the electronic configuration of elements and understand filling of electrons in orbitals</li> </ol> | TITRATION   | <p>NUMERICALS BASED WORKSHEET</p> <p>WORKSHEET</p>             | Oral and written test |
| JUNE                       | <p><b>Some Basic Concepts of Chemistry(contd.)</b><br/>Chemical reactions, Stoichiometry and calculations based on stoichiometry</p> <p><b>CHAPTER-3</b><br/><b>Classification of Elements and Periodicity in Properties</b> Significance of classification, brief history of the</p>   | <p>Students will be able to do stoichiometric calculations of chemical equations to determine the quantities of reactants and products, limiting reagent problems, and enthalpies of reactions.</p> <p>The students will be able to</p> <ol style="list-style-type: none"> <li>1. Understand about the periodic classification of elements</li> <li>2. Cherish</li> </ol>   | TITRATION   | <p>NUMERICALS BASED WORKSHEET</p> <p>NCERT Based worksheet</p> | Oral and written test |



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|  | <p>change in oxidation number, applications of redox reactions.</p> <p><b>CHAPTER-4</b><br/><b>Chemical Bonding and Molecular Structure</b><br/>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</p> | <p>3.Mechanism of electron transfer involved in redox reactions<br/>4.Calculation of oxidation numbers in terms of electron transfer<br/>5.Various kinds of reactions in terms of redox reaction<br/>6.Balancing of redox reactions using i) oxidation number method ii) half reaction method</p> <p>The students will be able to</p> <ol style="list-style-type: none"> <li>1.Understand the different approaches to types of chemical bonding</li> <li>2.Explain the rules to write the Lewis structures of simple molecules and the limitations involved</li> <li>3.Calculate the formal charge of atoms present in the Lewis structures which will give an idea of actual shapes of molecules</li> <li>4.Explain the Bond parameters viz., Bond angle, Bond length, Bond enthalpy and Bond order which would give a complete knowledge of electronic concept of structures of the molecules</li> <li>5.Describe the VSEPR theory and its significance in predicting the anomalous change in geometry of molecules due to different kinds of electronic</li> </ol> |  | <p>Ball and stick model or balloon model of chemical compounds</p> |  |
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| AUGUST    | <p><b>Chemical Bonding and Molecular Structure(contd.)</b><br/>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.</p> <p><b>CHAPTER-12</b><br/><b>Organic Chemistry - Some Basic Principles and Techniques</b><br/>Classification and IUPAC nomenclature of organic compounds. Electronic displacements in a covalent bond: inductive effect, electromeric effect, resonance and hyper conjugation. Homolytic and heterolytic fission of a covalent bond: free radicals, carbocations, carbanions, electrophiles and nucleophiles, types of organic reactions.</p> | <p>6.Give an account of VB theory that predicts the geometry of molecules in terms of the concept of hybridization<br/>7.Explain the concept of resonance<br/>8.Describe the concept of hydrogen bonding</p> <p>The students will be able to 1.Interpret the structure of molecules in different ways<br/>2.Classify and give the nomenclature of organic compounds in trivial and IUPAC system.<br/>3.Explain about different types of isomerism exhibited by organic compounds 4.Bring out the effect of electronic displacements on structure and reactivity of organic compounds</p> | PRACTICALS    | <p>ART INTEGRATED ACTIVITY (Rangoli or mehndi designs for hybridisation)</p> <p>WORKSHEET</p> | Oral and written test |
| SEPTEMBER |  |  |               |   | TERM-1                |
| OCTOBER   | <p><b>CHAPTER-6</b><br/><b>Thermodynamics</b><br/>Concepts of System and types of systems, surroundings, work, heat, energy, extensive and intensive properties, state functions. First law of thermodynamics - internal energy and enthalpy, heat capacity and specific heat, measurement of U and</p>  | <p>The students will be able to understand<br/>1. The concept of System and surroundings in thermodynamics and their types<br/>2.First law of thermodynamics in terms of internal energy, work and heat. 3.Relationship between internal</p>   | SALT ANALYSIS | NCERT BASED WORKSHEET   | Oral and written test |

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|          | <p>H, Hess's law of constant heat summation, enthalpy of bond dissociation, combustion, formation, atomization, sublimation, phase transition, ionization, solution and dilution. Second law of Thermodynamics (brief introduction)</p> <p><b>Organic Chemistry - Some Basic Principles and Techniques(contd.)</b><br/>General introduction, methods of purification, qualitative and quantitative analysis</p>  | <p>energy and enthalpy changes and the formulation of Hess's law<br/>4.Intensive and Extensive properties of a system<br/>5.Different types of enthalpy changes involved in terms of Hess's law</p> <p>Students will be able to<br/>5.Understand the methods of purification of organic compounds<br/>6.Explain in detail the qualitative and quantitative aspects of organic compounds.</p>  |                   | WORKSHEET             |                       |
| NOVEMBER | <p><b>Thermodynamics(contd.)</b><br/>Introduction of entropy as a state function, Gibb's energy change for spontaneous and non-spontaneous processes, criteria for equilibrium. Third law of thermodynamics (brief introduction).</p> <p><b>CHAPTER-13 Hydrocarbons</b><br/>Classification of Hydrocarbons Aliphatic Hydrocarbons: Alkanes - Nomenclature, isomerism, conformation (ethane only), physical properties, chemical reactions including free radical mechanism of halogenation, combustion and pyrolysis. Alkenes - Nomenclature, structure of double bond (ethene), geometrical isomerism, physical properties, methods of preparation, chemical reactions: addition of hydrogen,</p> | <p>Students will be able to – understand Gibbs free energy, entropy and the concept of spontaneity</p> <p>The students will be able to<br/>1.Name the different kinds of hydrocarbons according to common and IUPAC nomenclature<br/>2.Identify and write the structures of isomers of aliphatic and aromatic hydrocarbons<br/>3.Know different forms arise due to free rotation of C-C bond in alkanes(conformers)<br/>4.Discuss on Preparations and Properties of</p> | ELEMENT DETECTION | NCERT BASED WORKSHEET | Oral and written test |
|          |  |   |                   | WORKSHEET             |                       |

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|          | halogen, water, hydrogen halides (Markovnikov's addition and peroxide effect), ozonolysis, oxidation, mechanism of electrophilic addition.  | alkanes, alkenes, alkynes and arenes<br>5. Define Geometrical isomers (cis-trans) arising due to the restricted rotation about C=C  |               |                              |                               |
| DECEMBER | <p><b>CHAPTER-7</b><br/><b>Equilibrium</b><br/>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</p> <p><b>Hydrocarbons(contd.)</b><br/>Alkynes - Nomenclature, 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. Aromatic Hydrocarbons: Introduction, IUPAC nomenclature, benzene: resonance, aromaticity</p> | <p>The students will be able to</p> <ol style="list-style-type: none"> <li>1. Understand the equilibria existing between different states of matter</li> <li>2. Explain the characteristics of chemical equilibrium and equilibrium constant</li> <li>3. Bring out the relationship between equilibrium constants at different conditions</li> <li>4. Classify substances as acids and bases on the basis of different theories</li> </ol> <p>Students will be able to-</p> <ul style="list-style-type: none"> <li>*Discuss on Preparations and Properties of alkynes and arenes</li> <li>*Reason out the acidic nature of alkynes.</li> </ul> <p>6. Explain resonance and extra stability of benzene</p> | SALT ANALYSIS | FIND PH OF DIFFERENT LIQUIDS | PT-2<br>Oral and written test |
|          |   |   |               | CONVERSION WORKSHEET         |                               |
| JANUARY  | <b>Equilibrium(contd.)</b><br>Hydrolysis of salts (elementary idea), buffer solution, Henderson Equation, solubility  | Students will be able to<br>5. Explain different important concepts of equilibrium viz.,  | SALT ANALYSIS | NCERT BASED WORKSHEET        | Oral and written test         |

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|          | <p>product, common ion effect (with illustrative examples).</p> <p><b>Hydrocarbons(contd.)</b><br/>Chemical properties: mechanism of electrophilic substitution. Nitration, sulphonation, halogenation, Friedel Craft's alkylation and acylation, directive influence of functional group in monosubstituted benzene. Carcinogenicity and toxicity</p> | <p>pH scale, ionic product of water, common ion effect, buffer solution<br/>6. Understand and calculate solubility product<br/>7. Solve problems pertaining to this chapter</p> <p>Students will be able to-<br/>7. Describe directive influence of functional groups on the aromatic ring system.<br/>8. Explain Carcinogenicity and Toxicity in aromatic hydrocarbons</p> |  |  |            |
| FEBRUARY |  |   |  |  | FINAL EXAM |
| MARCH    |  |   |  |  | -----      |

NAME OF THE SUBJECT TEACHER: Dr. Pragati Vijay

SIGNATURE OF THE SUBJECT COORDINATOR :