

Cambridge International School, Mohal, Kullu

Class-XI , Subject – Chemistry

Session – 2020-21

Subject Code (043)

UNIT	LEARNING OBJECTIVES	LINKS USED	METHOD OLOGY	ASSESSMENT/ ASSIGNMENT
MAY UNIT 1	<p>BASIC CONCEPTS IN CHEMISTRY</p> <p>Learning outcomes: Students were able to:</p> <ul style="list-style-type: none"> ● Understand General Introduction: Importance and scope of chemistry. ● Describe the Nature of matter, laws of chemical combination, Dalton's atomic theory: concept of elements, atoms and molecules. ● Calculated the Atomic and molecular masses, Performed calculations based upon mole concept and molar mass, percentage composition, empirical and molecular formula, chemical reactions, stoichiometry ● Performed the Calculations based on stoichiometry. 	<p>https://youtu.be/VmWmHhNjIL4</p> <p>https://youtu.be/wcKXAbl_xEI</p>	<p>Discussion / Explanation through examples/ Video demonstration/ Notes making</p>	<p>Knowledge based questions Conceptual questions HOTS SKLLS Analytical skills Numerical solving skills. Pen Paper test after the completion of unit</p>
JUNE UNIT 2	<p>STRUCTURE OF ATOM</p> <p>LEARNING OUTCOMES:</p> <p>Students were able to</p> <ul style="list-style-type: none"> ● Illustrate the Discovery of Electron, Proton and Neutron, ● Calculated the atomic number, ● Defined with examples the isotopes and isobars. ● Explained Thomson's model and its limitations. ● Described Rutherford's model and its limitations, ● Characterised the postulates of Bohr's model and its limitations, concept of shells and sub shells ● Derived dual nature of matter and light, ● Derived de Broglie's relationship ● Gave mathematical representation of Heisenberg uncertainty principle ● Illustrated concept of orbitals, quantum numbers ● Draw 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 ● Explained the reasons for stability of 	<p>https://youtu.be/t6Ga71v9dGo</p> <p>https://youtu.be/TMRiZhsYLe4</p> <p>https://youtu.be/tigvyU8nZWI</p> <p>Experiment: determination of strength of a given solution of hydrochloric acid by titrating it against standard sodium carbonate solution</p> <p>https://youtu.be/7pvTTRrLzXg</p>	<p>Discussion / Explanation through examples/ Video demonstration/ Notes making</p>	<p>Group discussion Conceptual questions Pen paper test Numerical solving skills.</p>

	half filled and completely filled orbit			
UNIT 3 JULY	CLASSIFICATION OF ELEMENTS AND PERIODICITY IN PROPERTIES LEARNING OUTCOMES: Students were able to understand: <ul style="list-style-type: none"> ● Describe Modern periodic law and the present form of periodic table ● Give reasons for the periodicity in properties of elements -atomic radii, ionic radii, inert gas radii, Ionization enthalpy, electron gain enthalpy, electronegativity, valency. ● Write the IUPAC nomenclature of elements with atomic number greater than 100. 	https://youtu.be/ZQnmzQ8Pulg https://www.youtube.com/playlist?list=PLk5fPJ7M_8pII_KruaUWQQURX2HD4VM2Y https://youtu.be/USmycuqfRQ	Discussion / Explanation through examples/ Video demonstration/ Notes making	Knowledge based questions HOTS. Conceptual understanding of the subject matter
UNIT 4 AUGUST	CHEMICAL BONDING AND MOLECULAR STRUCTURE Students will be able to: <ul style="list-style-type: none"> ● Deduce the Valence electrons ● Explain about ionic bond, covalent bond; bond parameters ● Draw the Lewis structure of elements ● Analyse the polar character of covalent bond and covalent character of ionic bond ● Summarize valence bond theory, resonance ● Draw the geometry of covalent molecules, ● Give postulates of VSEPR theory, ● Illustrate the concept of hybridization involving s,p and d orbitals ● Draw the shapes of some simple molecules, ● Explain Molecular orbital theory of homonuclear diatomic molecules (qualitative idea only), hydrogen bond. 	. Quantitative Estimation <ul style="list-style-type: none"> ● Determination of strength of a given solution of Sodium Hydroxide by titrating it against standard solution of oxalic acid https://youtu.be/XD5GZYjtGe https://youtu.be/jWZKZojacPY https://youtu.be/0Y2BlcI2EqM https://www.youtube.com/playlist?list=PLk5fPJ7M_8pKFIQOm8mSIOCqKqiggpvYG	Discussion / Explanation through examples/ Video demonstration/ Notes making	SA/VSA questions. Group discussion. Conceptual questions. Pen paper test.
UNIT 5	STATES OF MATTER: GASES AND LIQUIDS LEARNING OBJECTIVE:	https://youtu.be/MNNJwfwMUf0 https://youtu.be/3o7XNAPpUKg	Discussion / Explanation through examples/ Video	Knowledge based questions. MCQ's. Numerical solving skills

<p>AUGUST</p>	<p>Students will be able to:</p> <ul style="list-style-type: none"> ● Describe the Three states of matter ● Tabulate the types of intermolecular interactions, types of bonding, melting and boiling points ● Describe the role of gas laws in elucidating the concept of the molecule ● Mathematically explain the Boyle's law, Charles law, Gay Lussac's law, Avogadro's Law, ideal behaviour, empirical derivation of gas equation, Avogadro's number, ideal gas equation ● Give reasons for Deviation from ideal behaviour 	<p>https://www.youtube.com/playlist?list=PLk5fPJ7M_8pIc_oekn2JXt4X3K_OV51Cci</p> <p>https://youtu.be/QNLeoDFNXcw</p>	<p>demonstration/ Notes making</p>	<p>Analytical skills Pen Paper test after the completion of unit</p>
<p>UNIT 6</p> <p>SEPTEMBER</p>	<p>CHEMICAL THERMODYNAMICS</p> <p>LEARNING OBJECTIVES:</p> <p>Students will be able to:</p> <ul style="list-style-type: none"> ● Describe the Concepts of System and types of systems, surroundings, work, heat, energy, extensive and intensive properties, state functions. ● Illustrate the First law of thermodynamics -internal energy and enthalpy ● Calculation of measurement of U and H ● Elaborate Hess's law of constant heat summation ● Define the enthalpy of bond dissociation, combustion, formation, atomization, sublimation, phase transition, ionization, solution and dilution. ● Explain the Second law of Thermodynamics (brief introduction) ● Define entropy as a state function, Gibb's energy change for spontaneous and non-spontaneous Processes ● Define Third law of thermodynamics (brief introduction). 	<p>https://youtu.be/1nECy2s_qEo</p> <p>https://youtu.be/Pc8CbCO-O5U</p>	<p>Discussion / Explanation through examples/ Video demonstration/ Notes making</p>	<p>MCQ's test of various concepts of theory. Numericals solving skill. Conceptual questions. Pen paper test.</p>
<p>UNIT 7</p> <p>SEPTEMBER</p>	<p>EQUILIBRIUM</p> <p>LEARNING OUTCOME:</p> <p>Students will be able to:</p> <ul style="list-style-type: none"> ● Express the Equilibrium in physical and chemical processes, dynamic nature of equilibrium ● Define law of mass action, equilibrium constant ● Describe factors affecting equilibrium 	<p>https://youtu.be/Pv86-ThCao4</p>	<p>Discussion / Explanation through examples/ Video demonstration/ Notes making</p>	<p>Knowledge based questions MCQ's test of numericals Skill Reasoning and understanding . Pen paper test. Half Yearly Examination</p>

	<p>- 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</p> <ul style="list-style-type: none"> ● Illustrate the concept of pH, buffer solution ● Write the Solubility product, ● Describe common ion effect (with illustrative examples). 			
<p>UNIT 8</p> <p>SEPTEMBER</p>	<p>REDOX REACTIONS</p> <p>LEARNING OUTCOMES:</p> <p>Students will be able to:</p> <ul style="list-style-type: none"> ● Summarize the Concept of oxidation and reduction, redox reactions, oxidation number ● Perform the balancing of redox reactions, in terms of loss and gain of electrons and change in oxidation number 	<p>https://youtu.be/tL1ZZDxyvA</p>	<p>Discussion / Explanation through examples/ Video demonstration/ Notes making</p>	<p>VSA/SA questions Knowledge based questions. MCQ's Numerical solving skills. Pen Paper test after the completion of unit</p>
<p>UNIT 9</p> <p>OCTOBER</p>	<p>HYDROGEN</p> <p>LEARNING OUTCOME:</p> <p>Students will be able to:</p> <ul style="list-style-type: none"> ● Give reasons for the Position of hydrogen in periodic table, ● Explain the occurrence, isotopes, hydrides-ionic covalent and interstitial ● Tabulate the physical and chemical properties of water, heavy water, hydrogen ● Reasons for use of hydrogen as a fuel. 	<p>https://youtu.be/nBbjZdsBIIA</p> <p>https://youtu.be/ps8WmPrmOAw</p>	<p>Discussion / Explanation through examples/ Video demonstration/ Notes making</p>	<p>VSA/SA questions Knowledge based questions. MCQ's Numerical solving skill</p>
<p>UNIT 10</p> <p>OCTOBER</p>	<p>s - BLOCK ELEMENTS: ALKALI AND ALKALINE EARTH METALS</p> <p>LEARNING OUTCOMES:</p> <p>Students will be able to:</p> <ul style="list-style-type: none"> ● Classify the Group 1 and group 2 elements ● Summarize their general introduction, electronic configuration, occurrence, anomalous properties of the first element of each group ● Describe the diagonal relationship, ● Compare the trends in the variation of properties (such as ionization enthalpy, atomic and ionic radii), ● Compare the trends in chemical reactivity with oxygen, water, hydrogen and halogens ● Analyse its uses. 	<p>PROJECT</p> <p>Scientific investigations involving laboratory testing and collecting information from other sources. A few suggested Projects</p> <ul style="list-style-type: none"> ● Study of the methods of purification of water. https://youtu.be/KfWnDGDWWVI ● Investigation of the foaming capacity of different washing soaps and the effect of addition 	<p>Discussion / Explanation through examples/ Video demonstration/ Notes making</p>	<p>Pen paper test of theory Assignment on logical reasoning. Understanding and knowledge.</p>

		<p>of Sodium Carbonate on it. https://youtu.be/rBTt8yIEf6k</p> <ul style="list-style-type: none"> Determination of the rate of evaporation of different liquids. https://youtu.be/MkAk6vhJdQc 		
<p>UNIT 11</p> <p>OCTOBER</p>	<p>SOME p - BLOCK ELEMENT</p> <p>LEARNING OUTCOMES:</p> <p>Students will be able to:</p> <ul style="list-style-type: none"> Introduce the p -Block Elements Classify Group 13 Elements in terms of General introduction, electronic configuration, occurrence, variation of properties, oxidation states, trends in chemical reactivity, anomalous properties of first element of the group Describe about Boron -physical and chemical properties Classify Group 14 Elements in terms of General introduction, electronic configuration, occurrence, variation of properties, Oxidation states, trends in chemical reactivity, anomalous behaviour of first elements. Explain Carbon-catenation, Allotropic forms, physical and chemical properties 	<p>https://youtu.be/k6ZcacVzpQ</p> <p>Experiment: detection of nitrogen sulphur chlorine in organic compounds</p> <p>https://youtu.be/FUo428guKt0</p>	<p>Discussion / Explanation through examples/ Video demonstration/ Notes making</p>	<p>MCQ. SA/VSA logical reasoning questions. Group discussion Conceptual questions. Pen Paper test after the completion of unit</p>
<p>UNIT 12</p> <p>NOVEMBER</p>	<p>ORGANIC CHEMISTRY: SOME BASIC PRINCIPLES AND TECHNIQUES.</p> <p>LEARNING OBJECTIVE:</p> <p>Students will be able to:</p> <ul style="list-style-type: none"> Introduce classify and write IUPAC nomenclature of organic compounds. Diagrammatically explain the Electronic displacements in a covalent bond: inductive effect, electromeric effect, resonance and hyper conjugation. Diagrammatically explain about Homolytic and heterolytic fission of a covalent bond: free radicals, 	<p>https://youtu.be/vu5QQqA5Oz8</p> <p>https://youtu.be/m24x7MMCPfY</p>	<p>Discussion / Explanation through examples/ Video demonstration/ Notes making</p>	<p>Group discussion Skills. Practice to enhance their Numerical solving/Thinking/Reasoning skill. Pen paper test.</p>

	carbocations, carbanions, electrophiles and nucleophiles <ul style="list-style-type: none"> ● Tabulate the types of organic reactions. 			
UNIT 13 NOVEMBER	HYDROCARBONS LEARNING OBJECTIVES: Students will be able to: <ul style="list-style-type: none"> ● Classify the Hydrocarbons ● a) Aliphatic Hydrocarbons: <ul style="list-style-type: none"> ● Diagrammatically explain about <ol style="list-style-type: none"> 1) ALKANES - Nomenclature, isomerism, conformation (ethane only), physical properties, 2) ALKENES - Nomenclature, 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. 3) 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. ● b) Aromatic Hydrocarbons ● Introduce and write IUPAC nomenclature, ● Diagrammatically explain about benzene: resonance, aromaticity, chemical properties: mechanism of electrophilic substitution. Nitration, sulphonation, halogenation, Friedel Craft's alkylation and acylation, directive influence of functional group in mono substituted benzene. ● Summarize Carcinogenicity and toxicity. 	https://youtu.be/rN42U9qFj2c https://youtu.be/Nv80DcSMUts Experiment: qualitative analysis Determination of one anion and one cation in a given salt https://youtu.be/5eBS6apmNL8	Discussion / Explanation through examples/ Video demonstration/ Notes making	Group discussion Skills. Practice to enhance their Numerical solving/Thinking/Reasoning skill. Pen paper test.

PRACTICALS

Evaluation Scheme for Examination Marks

Volumetric Analysis -	08
Salt Analysis -	08
Content Based Experiment -	06
Project Work -	04
Class record and viva -	04
Total	30