

**MONTHLY SYLLABUS**

**SESSION-2017-18**

**CLASS-XI**

**SUBJECT : CHEMISTRY**

<b>MONTH</b>	<b>CONTENTS</b>
July 2017	<p><b>Unit-I: Some Basic Concept of Chemistry:</b> 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.</p> <p>NCERT Questions.</p> <p>VBQ's related to content like chemical reactions, mole concept etc.</p> <p><b>Unit-II: Structure of Atom :</b> 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 sub shells, Dual nature of matter and light, De-Broglie relationship. Heisenberg's uncertainty principle. Concept of orbital, 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>NCERT Questions.</p> <p>VBQ's related to content like atomic models, quantum numbers etc.</p>

	<p><b>Practicals:</b></p> <p>1: Content Based Experiment (One)</p> <p>2: Prepare the standard solution of Oxalic acid and with its help determine the strength of the given solution of Sodium Hydroxide by titration method.</p> <p>3: Analyse Inorganic salt for one cation and one anion (One salt)</p> <p><b>YUVA Session No. 11.3</b> -How Can I Be Assertive?</p> <p><b>PSA practice exercises.</b></p>
August 2017	<p><b>UNIT-III: Classification of Elements and Periodicity in Properties</b> Significance of classification, Brief history of the development of period 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, electro negativity, valency., Nomenclature of elements atomic no. greater than 100.</p> <p>NCERT Questions.</p> <p>VBQ's related to content like periodic table, properties of elements.</p> <p><b>UNIT-IV: Chemical Bonding and Molecular Structure</b> Valence electrons, ionic bond, covalent bond, Bond parameters, Lewis structure, polar Character of covalent bond, covalent character of ionic bond, resonance. Geometry of covalent molecules, VSEPR theory, valence bond 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.</p> <p>NCERT Questions.</p> <p>VBQ's related to content like shapes, Hydrogen bond etc.</p> <p><b>Practicals:</b></p>

	<p>4: Content Based Experiment (One)</p> <p>5: Content based experiment (one).</p> <p>6: Analyse Inorganic salt for one cation and one anion (One salt)</p> <p>7: Content Based Experiment (One)</p> <p><b>YUVA Session 11.5</b>-Developing Good Relationship.</p>
September 2017	<p><b>Unit -V: States of Matter(Gases and Liquids)</b> Three states of matter, intermolecular interactions, types of bonding, melting and boiling point, role of gas laws in elucidating the concept of the molecule, 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, Deviations from ideal behaviour, liquefaction of gases, critical temperature, kinetic energy and molecular speeds (Elementary idea only), Liquid state -vapour pressure, Viscosity and surface tension (qualitative idea only, no Mathematical derivation).</p> <p>NCERT Questions.</p> <p>VBQ's related to content like intermolecular interactions, gas laws etc.</p> <p><b>Practicals</b></p> <p>8: Analyse Inorganic salt for one cation and one anion (One salt)</p> <p><b>Revision:</b> Units I to VI for SA-I</p>
	<p><b>FIRST TERM EXAMINATION 2017-18</b></p> <p><b>AUTUMN BREAK</b></p>
October 2017	<p><b>Discussion of Question Paper of First Term</b></p> <p><b>Unit VI: Chemical Thermodynamics</b> Concept of system, types of system, surroundings, work, heat energy, Extensive and Intensive property, state functions, first law of thermodynamics - Internal energy and enthalpy. Heat Capacity and specific heat,</p>

measurement of  $\Delta U$  and  $\Delta H$ . Hess's law of Constant heat summation, Enthalpy of bond dissociation, combustion, formation, sublimation, ionization, atomization, phase transition, solution and dilution. Second law of Thermodynamics, (brief introduction). Introduction of entropy as a state function, Gibb's energy change for spontaneous and non-spontaneous process, criteria for equilibrium, Third law of thermodynamics (brief introduction).

NCERT Questions.

VBQ's related to content like laws of Thermodynamics, Heat etc.

PSA-practice exercises.

**Unit VII: 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 polybasic acids. Acid Strength, Concept of pH, Henderson equation, Hydrolysis of salt (Elementary idea), buffer solution, Solubility product, Common ion effect.(with illustrative examples)

NCERT Questions & numericals.

VBQ's related to content Buffer solutions in body fluids etc...

### **Practical**

9: Content Based Experiment (One)

10: Prepare standard solution of Sodium Carbonate and with its help determine the strength of the given solution of Hydrochloric acid using titration method.

11: Analyse Inorganic salt for one cation and one anion (One salt)

<p>November 2017</p>	<p><b>Unit -VIII: Redox Reactions</b> 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.</p> <p>VBQ's related to content like Applications of redox reactions etc.</p> <p>NCERT Questions of Unit-8</p> <p><b>Unit IX: Hydrogen</b> Position of hydrogen in periodic table, occurrence, isotopes, preparation, properties and uses of hydrogen. Hydrides: Ionic, Covalent, Interstitial, Physical and chemical properties of water, hardens of water, heavy water and hydrogen peroxide preparation, reactions, structure and uses, hydrogen as a fuel.</p> <p>NCERT Questions.</p> <p>VBQ's related to content like properties and uses of hydrogen and hydrogen peroxide etc.</p> <p><b>Unit - X : S - Block Elements</b> (alkali and alkaline earth metals)  Group 1 and Group 2 elements: General Introduction, Electronic Configuration, occurrence, anomalous.- Properties of the first element of each group, diagonal relationship, trends in the variation of properties (Ionization enthalpy atomic and Ionic radii). Trends in chemical reactivity with oxygen, water, hydrogen and halogens, uses. Preparation and properties of some important compounds: Sodium carbonate, Sodium Chloride. Sodium hydroxide and Sodium hydrogen carbonate Biological importance of Na and K. Calcium Oxide calcium hydroxide, plaster of paris, and Calcium Carbonate and their industrial uses. Biological importance of Mg and Ca,</p>
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	<p>NCERT Questions.</p> <p>VBQ's related to content like properties of some important compounds etc.</p> <p><b>Practicals</b></p> <p>12: Content Based Experiment (One)</p> <p>13: Content Based Experiment (One)</p> <p>14: Analyse Inorganic salt for one cation and one anion (One salt)</p> <p><b>YUVA Session 11.6:</b> Learning to manage stressful feelings!</p>
December 2017	<p><b>Unit-XI: Some p- Block elements</b> General Introduction to p-Block elements. Group 13 Elements: General introduction, electronic configuration, occurrence, variation of properties. Trends in chemical reactivity, anomalous properties of first elements of the group, Boron -physical and chemical properties, some important compounds: Borax, Boric acid, boron hydrides, Aluminium : reaction with acids and alkalies, uses: 6 Group-14 Elements : General introduction, electronic Configuration, Occurrence, Variation of properties. Oxidation states, trends in chemical reactivity. Anomalous behavior of first element of group. Carbon- Catenation, allotropic, forms, physical and chemical properties, Uses of some important compounds: Oxides. Important compounds of silicon and few uses: Silicon tetrachloride, silicones, silicates and zeolites, their uses.</p> <p>NCERT Questions.</p> <p>VBQ's related to content like properties and uses of compounds of 13, 14 group elements etc.</p> <p><b>Unit XII: Organic chemistry - Some Basic Principles and Techniques:</b></p> <p>Classification and IUPAC nomenclature of organic compounds.</p>

	<p>Electronic displacement in a Covalent bond. Inductive effect, Electrometric effect, resonance effect and hyper. conjugation effect, Homolytic and heterolytic fission of a Covalent bond. Free radicals, carbocations, carbonions, electrophiles and nucleophiles, types of organic reaction. General Introduction, methods of purification</p> <p>Qualitative and quantitative analysis NCERT Questions. VBQ.'s related to content like methods of purification etc.</p> <p><b>Practicals</b></p> <p>15: Content Based Experiment (One)</p> <p>16: Analyse Inorganic salt for one cation and one anion (One salt)</p> <p>17: Content Based Experiment (One)</p> <p>18: Practical-19: Analyse Inorganic salt for one cation and one anion (One salt)</p> <p><b>YUVA session 11.10: Respect and Care</b></p>
	<p><b>WINTER BREAK</b></p>
<p>January 2018</p>	<p><b>Unit XIII: Hydrocarbons Alkanes:-</b> Nomenclature, isomerism. Conformation (ethane only.) Physical properties, chemical reactions including free radical mechanism of halogenations, combustion and pyrolysis. Alkenes:- Nomenclature, structure of double bond (ethene) Geometrical Isomerism, physical properties, methods of preparation, chemical reaction, addition reaction of hydrogen, halogens, water, hydrogen halides (Markovnikov's addition and peroxide effect), ozonolysis, oxidation, mechanism of electrophilic addition. Alkynes: Nomenclature, structure of triple bond (ethyne), physical properties, methods of preparation, chemical reactions: acidic character of Alkynes, addition reaction of hydrogen, halogens, water and hydrogen halides. Aromatic Hydrocarbons :</p>

	<p>Introduction, IUPAC nomenclature, Benzene: resonance, aromaticity, chemical properties: mechanism of electrophilic substitution - nitration, suiphonation, halogenations, Friedel Craft's alkylation and acylation, directive influence of functional group in mono substituted benzene, carcinogenicity and toxicity.</p> <p>NCERT Question :</p> <p>VBQ's related to content like physical properties, methods of preparations, chemical reactions etc.</p> <p><b>Practical-</b></p> <p>20: Content Based Experiment (One)</p>
February 2018	<p><b>Unit XIV: Environmental Chemistry</b> Environmental pollution: air, water and soil pollution, chemical reaction in atmosphere, smog, major atmospheric pollutants, acid rain, ozone and its reactions, effects of depletion of ozone layer, greenhouse effect and global warming - pollution due to industrial wastes, green chemistry as an alternative tool for reducing pollution. Strategies for control of environmental pollution.</p> <p>NCERT Questions.</p> <p>VBQ's related to content like acid rain, pollution etc.</p> <p><b>Revision of Units – 1 to 14</b> Including VBQ's from support material</p> <p><b>Revision from support material</b></p>
March 2018	<b>Annual Examination</b>

Note :- Syllabus of first term also included in second term examination.