

MONTHLY SYLLABUS
SESSION-2016-17
CLASS-XII
SUBJECT : CHEMISTRY

MONTH	CONTENTS
01.04.2016 to 08.04.2016	Orientation and Recapitulation: Discussion on importance of chemistry, scope of chemistry and other topics of interest
11.04.2016 to 30.04.2016	<p>UNIT-1 [Solid State]</p> <p>Classification of solids based on different binding forces: molecular, ionic, covalent and metallic solids, amorphous and crystalline solids (elementary idea). Unit cells in two dimensional and three dimensional lattices. Calculation of density of unit cell. Packing in solids, packing efficiency, voids.</p> <p>Number of atoms per unit cell in a cubic unit cell. point defects. electrical and magnetic properties, Band theory of metals, conductors, semi-conductors and insulators and n&p - type semiconductors.</p> <p>NCERT Questions. Value based questions related to contents like density, point defects, semiconductors etc.</p> <p>UNIT-II [Solutions]</p> <p>Types of solutions, expression of concentration of solution of solids in liquids, Solubility of gases in liquids, Raoult's Law, solid solutions, colligative properties - relative lowering of vapour pressure, elevation of boiling point.</p> <p>Depression of freezing point, Osmotic, pressure, determination of molecular masses using colligative properties, abnormal molecular masses, Van 't Hoff factor.</p> <p>NCERT Questions. Value based questions related to</p>

	<p>contents like Henry's law, solubility, colligative properties etc.</p> <p>Practical-1 : Content Based Experiment (One)</p> <p>Practical-2: Content Based Experiment (One)</p>
02.05.2016 to 10.05.2016	<p>UNIT-III [Electrochemistry]:</p> <p>Redox reactions, -conductance in electrolytic solutions. Specific and molar conductivity.</p> <p>YUVA Session No.12.4:1 TOO WILL WORK FOR A CLEAN AND SAFE ENVIRONMENT.</p> <p>Variations of conductivity with concentration, Kohlrausch's law, electrolysis and laws of electrolysis (elementary idea), Dry cell, electrolytic cells and galvanic-cells, lead accumulator, 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.</p> <p>Fuel cells, corrosion, NCERT Questions, Value based questions related to contents like Batteries, Corrosion etc.</p> <p>Practical-3 : Content Based Experiment(One)</p> <p>Practical-4 : (Volumetric Analysis).</p> <p>Determination of concentration/molarity of KMnO_4 solution by titrating it against a standard solution of Ferrous Ammonium Sulphate'.</p>
11.05.2016 onwards	SUMMER VACATIONS
01.07.2016 to 30.07.2016	<p>Unit IV- [Chemical Kinetics]</p> <p>Rate of a reaction (average and instantaneous reaction rate), factors affecting rate of reaction: concentration, Temperature, catalyst. Order and molecularity of a reaction.</p>

	<p>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 and Arrhenius equation.</p> <p>NCERT Questions. Value based questions related to contents like Catalyst, Activation Energy etc.</p> <p>Unit-V [Surface Chemistry]</p> <p>Adsorption-physisorption and chemisorption, factors affecting adsorption of gases on solids, Catalysis - homogeneous and heterogeneous, activity and selectivity, enzyme catalysis; colloidal state: distinction between true solutions, colloids and suspension; lyophilic, lyophobic, multimolecular and macromolecular colloids, properties of colloids: Tyndall effect, Brownian movement, electrophoresis, coagulation. Emulsion, types of emulsions.</p> <p>NCERT Questions. Value based questions related to contents like properties of colloids etc.</p> <p>Unit-VI [General Principles and Processes of Isolation of Elements]</p> <p>Principles and methods of extraction-concentrations, oxidation, reduction- electrolytic method and refining, occurrence and principles of extraction of aluminium, copper, zinc and iron.</p> <p>NCERT Questions. Value based questions related to contents like methods of purification etc.</p> <p>Practical-5, 6&7: Analyse inorganic salt for one cation and one anion. (three practicals)</p> <p>Practical-8&9 : Content Based Experiment (Two).</p> <p>Practical-10: Content Based Experiment (One).</p>
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01.08.2016 to 31.08.2016	<p>Unit - VII: [p-Block Elements].</p> <p>Group-15 Elements - General Introduction, electronic configuration, Occurrence, Oxidation states, trends in physical and chemical properties, Nitrogen: preparation, properties and uses, compounds of nitrogen- preparation and properties of ammonia and nitric acid, oxides of nitrogen (structure only) phosphorus, allotropic forms, compounds of phosphorus - Preparation and properties of phosphine, halides oxoacids. (Elementary idea only)</p> <p>Group-16 Elements- General introduction, electronic configuration, oxidation states, occurrence, trends in physical and chemical properties, dioxygen:preparation, properties and uses, classification of oxides, ozone, sulphur: allotropic forms, compounds of sulphur, preparation properties and uses of sulphur dioxide, sulphuric acid-industrial process of manufacture, properties and uses, oxo.acids of sulphur (structures only)</p> <p>Group-17 Elements- General Introduction, electronic configuration, oxidation states, occurrence, trends in physical and chemical properties. Compounds of halogens: preparation properties and uses of chlorine and hydrochloric acid. Interhalogen compounds. Oxoacids of halogens (structures only)</p> <p>Group-18 Elements-General Introduction, electronic configuration, occurrence, trends in physical and chemical properties, uses.</p> <p>NCERT Question. Value based questions related to contents like Properties and uses of Group -15,16,17 and 18 elements</p> <p>Unit-VIII [d and f block elements]</p> <p>General Introduction, electronic configuration, occurrence and characteristics of transition metals, general trends in properties of the first row transition metals : metallic- character, ionization</p>
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	<p>enthalpy, oxidation states, ionic radii, colour, catalytic property, magnetic properties, Interstitial compounds, alloy formation. Preparation and properties of $K_2Cr_2O_7$ & $KMnO_4$</p> <p>Lanthanoids -</p> <p>Electronic configuration, oxidation states, chemical reactivity, lanthanoid contraction, and its consequences</p> <p>Actinoids</p> <p>Electronic configuration, oxidation states and comparison with lanthanoids.</p> <p>NCERT Questions. Value based questions related to content like Properties and uses of d- and f- block elements and their compounds etc.</p> <p>Practical-10: Analyse inorganic salt for one cation and one anion.</p> <p>Practical-11: Analyse inorganic salt for one cation and one anion.</p> <p>Practical-12: Volumetric Analysis</p> <p>Determination of concentration! molarity of $KMnO_4$ solution by titrating it against a standard solution of 'Oxalic acid'.</p>
<p>01.09.2016 to 30.09.2016</p>	<p>UNIT -IX [Coordination Compounds]</p> <p>Introduction, ligands, coordination number, colour, magnetic properties and shapes</p> <p>IUPAC nomenclature of mononuclear coordination compounds, Bonding: Werner's theory. Valence Bond Theory, Crystal field theory, structure and stereoisomerism, importance of coordination compounds (in qualitative analysis, extraction of metals and biological systems).</p> <p>NCERT Questions. Value based questions related to contents</p>

	<p>like importance and uses of coordination compounds etc.</p> <p>Chapter-X [Haloalkanes and Haloarenes] Haloalkanes.</p> <p>Nomenclature, nature of C-X bond, physical & chemical Properties, mechanism of substitution reactions, optical rotation</p> <p>Haloarenes: Nature of C-X bond, substitution reactions (directive influence of halogen in monosubstituted compounds only). Uses and environment effect of dichloromethane, trichloromethane, tetrachloromethane, iodoform, freons and DDT.</p> <p>NCERT Questions. Value based questions related to contents like properties, uses etc.</p> <p>Practical-12 contd</p> <p>Practical-13: Analyse inorganic salt for one cation and one anion.</p> <p>REVISION OF UNIT 1-10 FROM SUPPORT MATERIALS</p>
	<p>EXAMINATION SUMMATIVE - I</p>
01.10.2016 to 31.10.2016	<p>Unit-XI [Alcohols, Phenols and Ethers]</p> <p>Alcohols-</p> <p>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.</p> <p>Phenols- Nomenclature, Method of preparation, physical and chemical properties, acidic nature of phenol, electrophilic chemical properties, acidic nature of phenol, electrophilic substitution reactions, uses of phenols.</p> <p>Ethers: Nomenclature, Methods of preparation, physical and chemical properties, uses.</p>

	<p>NCERT Questions. Value based questions related to contents like properties, uses, etc.</p> <p>Unit-XII [Aldehydes, Ketones and Carboxylic acids]</p> <p>Aldehydes & Ketones</p> <p>Nomenclature, Nature of carbonyl group, methods of preparation. Physical and chemical properties, mechanism of nucleophilic addition, reactivity of alpha hydrogen in aldehydes: uses.</p> <p>Carboxylic acids: Nomenclature, acidic nature, method of preparation physical and chemical properties; uses.</p> <p>NCERT Questions. Value based questions related to contents like properties, uses, etc.</p> <p>Practical-14: Analyse inorganic salt for one cation and one anion.</p> <p>Practical-15, 16: Content Based Experiment-(Two).</p> <p>Practical- 17,18,19: Content Based Experiments. (Three).</p>
<p>01.11.2016 to 30.11.2016</p>	<p>Unit-XIII- [ORGANIC COMPOUNDS CONTAINING NITROGEN] Amines:</p> <p>Physical and chemical properties, uses, identification of primary, secondary and tertiary amines.</p> <p>Cyanides and isocyanides: Cyanides and isocyanides will be mentioned at relevant places in context.</p> <p>Diazonium salts: Preparation, chemical reactions and importance in synthetic Organic Chemistry. NCERT Questions. Value based questions related to contents like properties, uses, etc.</p> <p>YUVA Session No-I CAN IMPROVE MY PERFORMANCE IN THE COMING BOARD EXAM.</p>

Unit-XIV [Bio molecules] Carbohydrates:

Classification (aldoses and ketoses)

Monosaccharides (glucose and fructose), D-L configuration, oligosaccharides (sucrose, maltose, lactose), poly saccharides (starch, cellulose, glycogen), Importance of carbohydrates.

Proteins: Elementary ideas of amino acids, peptide bond, polypeptides, proteins, structure of proteins - primary, secondary tertiary and quaternary structure (qualitative idea only) denaturation of proteins: enzymes. Hormones (elementary idea excluding structure)

Vitamins: Classifications and functions.

Nucleic Acids: DNA and RNA.

NCERT Questions. Value based questions related to contents like classification, uses structure etc.

Unit-XV [Polymers]

Classification-natural and synthetic methods of polymerization (addition and condensation), copolymerization. Some important polymers: natural and synthetic like polythene, nylon polyesters, bakelite, rubber.' Biodegradable and non – biodegradable polymers.

NCERT Questions. Value based questions related to contents like classification, uses structure properties etc.

Unit-XVI [Chemistry in Everyday Life]

Chemicals in Medicines-Analgesics; tranquilizers, antiseptics, disinfectants, antimicrobials, antifertility drugs, antibiotics antacids, antihistamines

Chemicals in food: Preservatives, artificial sweetening agents, elementary idea of antioxidants.

Cleansing agents: Soaps and detergents. cleansing action.

	<p>NCERT Questions. Value based questions related to contents like Preservatives medicine, Cleansing etc.</p> <p>Practical-20: Content Based Experiment (One).</p> <p>Practical-21 : Content Based Experiment (One).</p> <p>Practical-22: Content Based Experiment (One).</p> <p>Practical-23:Analyse inorganic salt for one cation and one anion.</p>
01.12.2016 to 31.12.2016	<p>PROJECT: SUBMISSION OF PROJECT REPORT</p> <p>REVISION OF UNIT 1- XVI</p> <p>VBQ'S FROM SUPPORT MATERIALS</p> <p>MOCK TEST</p>
01.01.2017 to 15.01.2017	WINTER BREAK
16.01.2017 to 31.01.2017	Revision and COMMON PRE-BOARD EXAMINATION
01.02.2017 to 28.02.2017	Revision and BOARD'S PRACTICAL EXAMINATION
01.03.2017 onwards	BOARD'S EXAMINATION - 2017

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