

ARMY GOODWILL PUBLIC SCHOOL RAJOURI (J&K)
TRUTH IS GOD
SPLIT-UP SYLLABUS CHEMISTRY (043) SESSION: 2021 – 2022

Class XII

CHEMISTRY (043)

S.NO	MONTH	Unit	TOPIC	No. of Periods Allotted	PRACTICALS
1	APRIL	I&II	<p>Unit I: Solid State: Classification of solids based on different binding forces: molecular, ionic, covalent and metallic solids, amorphous and crystalline solids (elementary idea). Unit cell in two dimensional and three dimensional lattices, calculation of density of unit cell, packing in solids, packing efficiency, voids, number of atoms per unit cell in a cubic unit cell, point defects, electrical and magnetic properties. Band theory of metals, conductors, semiconductors and insulators and n and p type semiconductors.</p> <p>Unit II: Solutions: Types of solutions, expression of concentration of solutions of solids in liquids, solubility of gases in liquids, solid solutions, Raoult's law, colligative properties - relative lowering of vapour pressure, elevation of boiling point, depression of freezing point, osmotic pressure, determination of molecular masses using colligative properties, abnormal molecular mass, Van't Hoff factor.</p>	20	VOLUMETRIC ANALYSIS & INVESTIGATORY PROJECT
2	MAY	Unit III & Unit - IV	<p>Unit III: Electrochemistry Redox reactions, 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, conductance in electrolytic solutions, specific and molar conductivity,</p>	26	VOLUMETRIC ANALYSIS & INVESTIGATORY PROJECT

			<p>variations of conductivity with concentration, Kohlrausch's Law, electrolysis and law of electrolysis (elementary idea), dry cell-electrolytic cells and Galvanic cells, lead accumulator, fuel cells, corrosion.</p> <p>Unit IV: Chemical Kinetics: Rate of a reaction (Average and instantaneous), factors affecting rate of reaction: concentration, temperature, catalyst; order and molecularity of a reaction, 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, Arrhenius equation.</p>		
3	JUNE	Unit – IV & V	<p>Unit V: Surface Chemistry : Adsorption - physisorption and chemisorption, factors affecting adsorption of gases on solids, catalysis: homogenous and heterogenous, activity and selectivity of solid catalysts; enzyme catalysis, colloidal state: distinction between true solutions, colloids and suspension; lyophilic, lyophobic, multi-molecular and macromolecular colloids; properties of colloids; Tyndall effect, Brownian movement, electrophoresis, coagulation, emulsion - types of emulsions</p> <p>Unit VI: General Principles and Processes of Isolation of Elements Principles and methods of extraction - concentration, oxidation, reduction - electrolytic method and refining; occurrence and principles of extraction of aluminium, copper, zinc and iron.</p>	24	VOLUMETRIC ANALYSIS & INVESTIGATORY PROJECT
4	JULY	Unit–VI	<p>Unit VI :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,</p>	20	SALT ANALYSIS & INVESTIGATORY PROJECT

			<p>compounds of Phosphorus: Preparation and properties of Phosphine, Halides and 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; Oxoacids 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. Unit VIII: d and f Block Elements 12 Periods General introduction, electronic conf</p>		
5	AUGUST	Unit –VII &VIII	<p>Unit VII: d and f Block Elements General introduction, electronic configuration, occurrence and characteristics of transition metals, general trends in properties of the first row transition metals – metallic character, ionization enthalpy, oxidation states, ionic radii, colour, catalytic property, magnetic properties, interstitial compounds, alloy formation, preparation and properties of $K_2Cr_2O_7$ and $KMnO_4$. Lanthanoids - Electronic configuration, oxidation states, chemical reactivity and lanthanoid contraction and its consequences. Actinoids - Electronic configuration, oxidation states and comparison with lanthanoids.</p>	26	SALT ANALYSIS & INVESTIGATORY PROJECT

			Unit VIII: Coordination Compounds. Coordination compounds - Introduction, ligands, coordination number, colour, magnetic properties and shapes, IUPAC nomenclature of mononuclear coordination compounds. Bonding, Werner's theory, VBT, and CFT; structure and stereoisomerism, importance of coordination compounds (in qualitative analysis, extraction of metals and biological system).		SALT ANALYSIS & INVESTIGATORY PROJECT
6	SEPTEMBER	Unit – IX & X	Unit IX: Haloalkanes and Haloarenes. Haloalkanes: Nomenclature, nature of C–X bond, physical and chemical properties, optical rotation mechanism of substitution reactions. Haloarenes: Nature of C–X bond, substitution reactions (Directive influence of halogen in monosubstituted compounds only). Uses and environmental effects of - dichloromethane, trichloromethane, tetrachloromethane, iodoform, freons, DDT.	22	SALT ANALYSIS & INVESTIGATORY PROJECT
			Unit X: Alcohols, Phenols and Ethers Alcohols: 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. Phenols: Nomenclature, methods of preparation, physical and chemical properties, acidic nature of phenol, electrophilic substitution reactions, uses of phenols. Ethers: Nomenclature, methods of preparation, physical and chemical properties, uses		CONTENT BASED PRACTICAL & INVESTIGATORY PROJECT -
			TERM-I EXAMINATION		

7	OCTOBER	Unit– XI & XII	Unit XII: Aldehydes, Ketones and Carboxylic & Amines		
			<p>Unit XII: Aldehydes, Ketones and Carboxylic Acids. Aldehydes and Ketones: Nomenclature, nature of carbonyl group, methods of preparation, physical and chemical properties, mechanism of nucleophilic addition, reactivity of alpha hydrogen in aldehydes, uses. Carboxylic Acids: Nomenclature, acidic nature, methods of preparation, physical and chemical properties; uses.</p> <p>Unit XIII: Amines 10 Periods Amines: Nomenclature, classification, structure, methods of preparation, physical and chemical properties, uses, identification of primary, secondary and tertiary amines. Diazonium salts: Preparation, chemical reactions and importance in synthetic organic chemistry.</p>	12	CONTENT BASED PRACTICAL & INVESTIGATORY PROJECT -
			<p>Unit XIII: Amines. Amines: Nomenclature, classification, structure, methods of preparation, physical and chemical properties, uses, identification of primary, secondary and tertiary amines. Diazonium salts: Preparation, chemical reactions and importance in synthetic organic chemistry.</p>	12	CONTENT BASED PRACTICAL & INVESTIGATORY PROJECT -
8	NOVEMBER	Unit–XIII & XIV	Biomolecules & Polymers.	20	CONTENT BASED PRACTICAL & INVESTIGATORY PROJECT
			<p>Unit XIII: Biomolecules Carbohydrates - Classification (aldoses and ketoses), monosaccharides (glucose and fructose), D-L configuration oligosaccharides (sucrose, lactose, maltose), polysaccharides (starch, cellulose, glycogen); Importance of carbohydrates. Proteins -</p>	20	

		<p>Elementary idea of - amino acids, peptide bond, polypeptides, proteins, structure of proteins - primary, secondary, tertiary structure and quaternary structures (qualitative idea only), denaturation of proteins; enzymes. Hormones - Elementary idea excluding structure. Vitamins - Classification and functions. Nucleic Acids: DNA and RNA.</p> <p>Unit XIV: 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. expansion of solids, liquids and gases, anomalous expansion of water; specific heat capacity; C_p, C_v - calorimetry; change of state - latent heat capacity. Heat transfer-conduction, convection and radiation, thermal conductivity, qualitative ideas of Blackbody radiation, Wein's displacement Law, Stefan's law, Green house effect.</p>		
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9	DECEMBER	Unit- XV	Chemistry in everyday life	12	CONTENT BASED PRACTICAL & INVESTIGATORY PROJECT
			<p>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> <p>REVISION FOR UT-2 CHAPTERS- 9-11</p>		CONTENT BASED PRACTICAL & INVESTIGATORY PROJECT
10	JANUARY		1st preboard +revision +remedial classes		
			<p>Chapter–13: Kinetic Theory</p> <p>Equation of state of a perfect gas, work done in compressing a gas. Kinetic theory of gases - assumptions, concept of pressure. Kinetic interpretation of temperature; rms speed of gas molecules; degrees of freedom, law of equi-partition of energy (statement only) and application to specific heat capacities of gases; concept of mean free path, Avogadro's number.</p>		

11	FEBRUARY		2nd preboard +practical examination		
12	MAR CH		Final examination (THEORY)		

- Note: The no of periods are as allotted by CBSE and may vary as per the need and circumstances.