

साप्ताहिक विच्छेदित पाठ्यक्रम 2023-24

CLASS - 12 SUBJECT - CHEMISTRY

Month	Week	Chapter	Topics	No. of periods	Practicals Microchemical methods are available for several of the practical experiments. Wherever possible such techniques should be used.	Learning outcomes
June 2023	1st, 2nd & 3rd	Solution (14 Periods)	Types of solutions, Expressing concentration of solutions, Vapour pressure of liquid solutions, Raoult's law, relative lowering of vapour pressure, Ideal and Non-ideal solutions, Colligative properties : Elevation in boiling point, Depression in freezing point Osmosis and osmotic pressure, Reverse osmosis, Hypertonic hypotonic, and Isotonic solutions, Azeotropic mixture, Abnormal molecular masses (Vant Hoff's Factor), association and dissociation of solutes. Solubility and Henry law			Students will be able to : identify different types of solution, express concentration of solution in different units, correlate vapour pressure with boiling point, freezing point and osmotic pressure of solution, distinguish ideal and non-ideal solutions
June 2023	4th (5 days)	Electrochemistry (14 Periods)	Introduction, Conductance and related parameter, Kohlrausch law, Electrochemical cell, representation of electrochemical cell, Oxidation and reduction potentials, Types of electrode, Electrochemical series, Measurement of electrode potential (EMF)	10	Variation of cell potential in Zn/Zn ²⁺ //Cu ²⁺ /Cu with change in concentration of electrolytes (CuSO ₄ or ZnSO ₄) at room temperature.	Students will be able to: differentiate between ionic and electronic conductivity, define resistivity, conductivity and molar conductivity of ionic solutions, describe an electrochemical cell, distinguish galvanic and electrolytic cell, understand quantitative aspects of electrolysis, describe the construction of primary and secondary batteries, understand the effect of corrosion and its prevention.
June 2023	5th (3 days)	Electrochemistry (14 Periods)	Nernst equation, Equilibrium constant and Nernst equation, Gibb's free energy,	6		
July	1st (1 day)	Electrochemistry (14 Periods)	Electrolytic cell and electrolysis, Batteries and Corrosion.	2		
July	2nd (6 days)	Chemical kinetics (12 Periods)	Introduction, Rate of chemical reaction (Average and instantaneous), Factors affecting rate of reaction, molecularity and rate law expression, order of reaction, units of rate constants, Determination of order of reaction : 1 Graphical method 2 integrated rate equations for zero order and first order reactions 3 initial rate method. Calculation of rate constant by : 1 Volumetric method 2 Pressure change method	12	(a) Effect of concentration and temperature on the rate of reaction between sodium thiosulphate and hydrochloric acid. (b) Study of reaction rates of any one of the following: (i) Reaction of iodide ion with hydrogen peroxide at room temperature using different concentration of iodide ions	

July	3rd (5 days)	Chemical kinetics (12 Periods)	Half life of reaction, Temperature dependence of rate of reaction, Arrhenius equation, Collision theory of chemical reactions, Effect of catalyst	10	concentration of iodide ions. (ii) Reaction between potassium iodate (KIO ₃) and sodium sulphite (Na ₂ SO ₃) using starch solution as indicator (clock reaction).	
July	4th (6 days)	The d- & f-Block Elements (08 Periods)	d-Block : Position in periodic table, Electronic configuration, General properties, Variation in atomic and ionic sizes, ionisation enthalpies, Oxidation states, Trends in Standard electrode potential, Chemical reactivity and E° value, Magnetic properties, catalytic properties, formation of coloured ions, complex compounds, interstitial compounds, alloys.	12	. Qualitative Analysis Determination of one anion and one cation in a given salt. Cations – Pb ²⁺ , Cu ²⁺ , As ³⁺ , Al ³⁺ , Fe ³⁺ , Mn ²⁺ , Ni ²⁺ , Zn ²⁺ , Co ²⁺ , Ca ²⁺ , Sr ²⁺ , Ba ²⁺ , Mg ²⁺ , NH ⁺	Students will be able to: understand the general characteristics of the d- and f- block elements. Preparation, properties and uses of some important compounds such as K ₂ Cr ₂ O ₇ and KMnO ₄ .
July	5th (5 days)	Co-ordination compounds (12 Periods)	Some important compounds of d- block elements : 1. K ₂ Cr ₂ O ₇ 2. KMnO ₄ . f- Block Elements: The Lanthanoids and Actinoids. Electronic configurations, Atomic and Ionic sizes, Oxidation states, General characteristics.	10	4 Anions – CO ₃ ²⁻ 3, S ₂ ²⁻ , SO ₃ ²⁻ 3, SO ₂ ²⁻ 4, NO ⁻ 2, NO ⁻ 3, Cl ⁻ , Br ⁻ , I ⁻ , PO ₃ ⁻ 4, C ₂ O ₄ ²⁻ 4 CH ₃ COO ⁻ (Note : Insoluble salts excluded	Students will be able to: know about co-ordination compounds, terms related to co-ordination compounds, bonding and isomerism in co-ordination compounds, appreciate the importance and application of co-ordination compounds like EDTA, cis- Platin, Wilkinson catalyst chlorophyll in our day to day life.
August	1st (5 days)	Co-ordination compounds (12 Periods)	Definition of some important terms pertaining to co-ordination compounds, Nomenclature Isomerism (Structural, geometrical & optical) of co-ordination compounds,	10	, Br ⁻ , I ⁻ , PO ₃ ⁻ 4, C ₂ O ₄ ²⁻ 4 CH ₃ COO ⁻ (Note : Insoluble salts excluded	
August	2nd (5 days)	Co-ordination compounds (12 Periods)	Bonding in co-ordination compounds (VBT & CFT), Werner's theory Bonding in metal carbonyls, stability of co-ordination compounds, Importance & applications of co-ordination compounds	10	Preparation of Inorganic Compounds (a) Preparation of double salt of ferrous ammonium sulphate or potash alum. (b) Preparation of potassium ferric oxalate.	
August	3rd (4 days)	Haloalkanes & Haloarenes (13 Periods)	Classification, Nomenclature, Nature of C-X bond, Methods of preparation of haloalkanes & haloarenes, Physical properties,	8	Test for the Functional Groups Present in Organic Compounds Unsaturation, alcoholic, phenolic,	"Students will be able to : 1.name haloalkanes and haloarenes from their structures,

August	4th (5 days)	Haloalkanes & Haloarenes (13 Periods)	chemical properties of haloalkanes: 1. Nucleophilic substitution reactions (SN ₁ , SN ₂ including stereochemical aspects), 2. Elimination reactions 3. Reactions with metals Chemical properties of haloarenes: 1. Nucleophilic substitution reactions 2. Electrophilic substitution reactions 3. Reactions with metals. Polyhalogen compounds.	10	aldehydic, ketonic, carboxylic and amino (primary) groups.	2. Describe the methods of preparation of haloalkane and haloarenes, and various reactions they undergo. 3. apply stereochemistry as a tool for understanding the reaction mechanism. 4. know the environmental effects of polyhalogen compounds like freons, DDT, carbon tetrachloride, chloroform."
August	5th (3 days)	Alcohols, Phenols and Ethers (14 Periods)	Alcohol and Phenol: Classification, nomenclature, structure of functional group.	6		
September	1st (2 days)	Alcohols, Phenols and Ethers (14 Periods)	Preparation of alcohol and phenol	4		"Students will be able to: 1. Name alcohols, phenols and ethers from their given structures. 2. Describe the methods of preparation of alcohols, phenols and ethers, and the various reactions they undergo. 3. Correlate physical properties of alcohols, phenols and ethers with their structures."
September	2nd (5 days)	Alcohols, Phenols and Ethers	physical and chemical properties of alcohol and phenol, Some commercially important alcohols, Ethers: Nomenclature, preparation and properties.	10		
September	3rd (5 days)	Aldehydes, Ketones and Carboxylic acid (14 Periods)	Aldehyde and Ketone: Nomenclature, structure of carbonyl group, methods of preparation	10	Preparation of Organic Compounds Preparation of any one of the following compounds: (a) Acetanilide (b) Di-benzal acetone (c) p-Nitroacetanilide. (d) Aniline yellow or 2-Naphthol aniline dye	. Students will be able to: 1. Name of aldehydes, ketones and carboxylic acid from their given structures. 2. Describe the methods of preparation of aldehydes, ketones and carboxylic acid, and the various reactions they undergo. 3. Correlate physical properties of aldehydes, ketones and carboxylic acid with
September	4th (4 days)	Aldehydes, Ketones and Carboxylic acid (14 Periods)	Physical properties and chemical properties (Nucleophilic addition reaction, Oxidation, Reduction,	8		
September	5th (3 days)	Aldehydes, Ketones and Carboxylic acid	Reactions due to α -H, Cannizzaro's reaction, Electrophilic substitution reaction), Carboxylic acid: Nomenclature, structure of carboxylic group, methods of preparation, physical and chemical properties	6		

October	1st (4 days)	Amines (07Periods)	Classification, Nomenclature, Methods of preparation, Physical and chemical properties of amines. Diazonium salts : methods of preparation, chemical properties	8		Students will be able to: 1. Describe amines as derivatives of ammonia. 2. classify amines as primary, secondary and tertiary. 3. Describe methods of preparation of amines and diazonium salts and the reactions they undergo. 4. Distinguish between primary, secondary and tertiary amines. 5. Describe importance of diazonium salts in synthesis of aromatic compounds.
October	2nd (6 days)	Bio-molecules (12 Periods)	Introduction and classification of carbohydrates, Preparation of glucose, structure of glucose (open chain & cyclic) Structure of fructose, Disaccharides (sucrose, maltose & lactose)	12	Study of Carbohydrates, Fats and Proteins in Pure Form and Detection of their Presence in given Food Stuffs Chromatography (a) Separation of pigments from extracts of leaves and flowers by paper chromatography and determination of Rf values. (b) Separation of constituents present in an inorganic mixture containing two cations only (constituents having wide difference in Rf values to be provided).	Students will be able to : 1.classify carbohydrates, proteins, nucleic acid and vitamins on the basis of their structures. 2. explain the characteristics of biomolecules. 3. explain the difference between DNA and RNA. 4. describe the role of biomolecules in biosystem.
October	3rd (4 days)	Bio-molecules (12 Periods)	Polysachharides(starch, cellulose & glycogen), Importance of carbohydrates. Vitamins, Hormones Proteins: amino acids, structure of protein, denaturation of protein, Nucleic acids, Enzymes	8		
October	4th (3 days)		Revision & Test	6	Determination of Concentration/Molarity of KMnO ₄	
October	5th(2 days)		Revision & Test	4	Solution by Titrating it against a Standard Solution of	
November	1st & 2nd (5 days)		Revision & Test	10	(a) Oxalic acid (b) Ferrous ammonium sulphate (Students will be required to prepare standard solutions by weighing themselves).	
November	3rd & 4th (6 days)		Revision & Test	12	Project	
November	5th (3 days)		Revision & Test	6	Scientific investigations involving laboratory testing and collecting information from other sources.	
December	1st (2 days)		Revision & Test	4		
December	2nd (6 days)		Revision & Test	12		
December	3rd (5 days)		Revision & Test	10		
December	4th (6 days)		Revision & Test	12		

January, February till board examination			Revision & Test			
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