

**SPLITUP OF SYLLABUS  
CHEMISTRY  
CLASS XII**

MONTH	CHAPTER	TOPIC	WEIGHTAGE
APRIL-JUNE 2023	SOLUTION	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.	07
	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, 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.	09
JULY 2023	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.	07
	D & F BLOCK ELEMENT	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.	07
AUGUST 2023	COORDINATION CHEMISTRY	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).	07

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AUGUST 2023	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.	06
SEPTEMBER 2023	ALCOHOL 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.	06
	ALDEHYDE, KETONES AND CARBOXYLIC ACID	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.	08
OCTOBER 2023	ALDEHYDE KETONES AND CARBOXYLIC ACID	Carboxylic Acids: Nomenclature, acidic nature, methods of preparation, physical and chemical properties; uses.	
	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.	06
NOVEMBER 2023	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 -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.	07

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MONTH	PRACTICAL	DETAILS OF PRACTICAL	WEIGHTAGE
APRIL – JUNE 2023	VOLUMETRIC ANALYSIS	Quantitative analysis (1) (a) Preparation of the standard solution of Oxalic acid of a given volume (b) Determination of molarity of $\text{KMnO}_4$ solution by titrating it against a standard solution of Oxalic acid. (2) The above exercise [F 1 (a) and (b)] to be conducted using Ferrous ammonium sulphate (Mohr's salt) G	08
JULY – AUGUST 2023	QUALITATIVE ANALYSIS	Qualitative analysis Determination of one cation and one anion in a given salt. Cation : $\text{Pb}^{2+}$ , $\text{Cu}^{2+}$ , $\text{As}^{3+}$ , $\text{Al}^{3+}$ , $\text{Fe}^{3+}$ , $\text{Mn}^{2+}$ , $\text{Zn}^{2+}$ , $\text{Cu}^{2+}$ , $\text{Ni}^{2+}$ , $\text{Ca}^{2+}$ , $\text{Sr}^{2+}$ , $\text{Ba}^{2+}$ , $\text{Mg}^{2+}$ , $\text{NH}_4^+$ + Anions: $(\text{CO}_3)^{2-}$ , $\text{S}^{2-}$ , $(\text{SO}_3)^{2-}$ , $(\text{NO}_2)^-$ , $(\text{SO}_4)^{2-}$ , $\text{Cl}^-$ , $\text{Br}^-$ , $\text{I}^-$ , $\text{PO}_3^{3-}$ , $(\text{C}_2\text{O}_4)^{2-}$ , $\text{CH}_3\text{COO}^-$ , $\text{NO}_3^-$ (Note: Insoluble salts excluded)	08
SEPTEMBER – OCTOBER 2023	CONTENT BASED EXPERIMENT	Surface Chemistry (a) Preparation of one lyophilic and one lyophobic sol Lyophilic sol - starch, egg albumin and gum Lyophobic sol - aluminium hydroxide, ferric hydroxide, arsenous sulphide. (b) Dialysis of sol-prepared in (a) above. (c) Study of the role of emulsifying agents in stabilizing the emulsion of different oils. B. Chemical Kinetics (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. (ii) Reaction between Potassium Iodate, $(\text{KIO}_3)$ and Sodium Sulphite: $(\text{Na}_2\text{SO}_3)$ using starch solution as indicator (clock reaction). C. Thermochemistry Any one of the following experiments i) Enthalpy of dissolution of Copper Sulphate or Potassium Nitrate. ii) Enthalpy of neutralization of strong acid (HCl) and strong base (NaOH). iii) Determination of enthalpy change during interaction (Hydrogen bond formation) between Acetone and Chloroform. D. Electrochemistry Variation of cell potential in $\text{Zn}/\text{Zn}^{2+}    \text{Cu}^{2+}/\text{Cu}$ with change in concentration of electrolytes ( $\text{CuSO}_4$ or $\text{ZnSO}_4$ ) at room temperature. E. Chromatography i) Separation of pigments from extracts of leaves and flowers by paper chromatography and determination of $R_f$ values. ii) Separation of constituents present in an inorganic mixture containing two cations only (constituents having large difference in $R_f$ values to be provided). Preparation of Inorganic Compounds Preparation of double salt of Ferrous Ammonium Sulphate or Potash Alum. Preparation of Potassium Ferric Oxalate. G. Preparation of Organic Compounds Preparation of any one of the following compounds i) Acetanilide ii) Di-benzalAcetone iii) p-Nitroacetanilide iv) Aniline yellow or 2 - Naphthol Anilinedye. H. Tests for the functional groups present in organic compounds: Unsaturation, alcoholic, phenolic, aldehydic, ketonic, carboxylic and amino (Primary) groups. I. Characteristic tests of carbohydrates, fats and proteins in pure samples and their detection in given foodstuffs. J. Determination of co	06
<b>ALL THE RECORDS AND INVESTIGATORY PROJECTS TO BE COMPLETED IN PARALLEL</b>			