**ANNUAL LESSON PLAN (2021-2022)**

**CLASS: XII**

**SUBJECT : CHEMISTRY**

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| **MONTH** | **CHAPTER** | **DETAIL CONCEPTS TO BE COVERED** | **ACTIVITY** |
| APRIL | SOLUTIONS | Types of solutions, Methods of expressing concentration of solution. solubility of solid in liquid, Gas in liquid, Vapour pressure of liqiud-liquid solutions, Ideal and non Ideal solution, Azeotrope, Colligative properties(elevation in boiling point. depression in freezing point, osmotic pressure),  Abnormal molecular mass. | AIL |
| THE SOLID STATE | Introduction,Types of solids,Difference between crystalline and amorphous solids, Types of crystalline solids, Crystal lattice, Unit cell, Types of crystal system, Calculation of number of atoms per unit cell, Close packing in solids, Calculations involving unit cell dimensions, Calculation of percentage of packing efficiency, Defects in the solids, Stoichiometric and Non- stoichiometric defects |  |
| JUNE | POLYMERS  GENERAL PRINCIPLES IN THE EXTRACTION OF ELEMENTS | Explanation of the terms - monomer, polymer and polymerisation and their importance; distinguish between various classes of polymers and different types of polymerisation processes; the formation of polymers from mono- and bifunctional monomer molecules; the preparation of some important synthetic polymers and their properties; the importance of polymers in daily life.  The terms minerals, ores, concentration, benefaction, calcination, roasting, refining, etc.; the principles of  oxidation and reduction as applied to the extraction procedures; the thermodynamic concepts like that of Gibbs energy and entropy to the principles of extraction of Al, Cu, Zn and Fe | AIL |
| JULY | HALOALKANES AND  HALO ARENES. | Nomenclature of haloakanes and haloarenes, classification, nature of bond, reactions involved in the preparation of haloalkanes and haloarenes and different types of reactions, SN1, SN2 mechanism, stereo chemistry to understand the reaction mechanism, applications of organo-metallic compounds, the environmental effects of polyhalogen compounds and distinction of halo compounds. |  |
| CHEMICAL KINETICS | Definition of the average and instantaneous rate of a reaction; the rate of a reaction in terms of change in concentration of either of the reactants or products with time; distintion between elementary and complex reactions; difference between the molecularity and order of a reaction; rate constant; dependence of rate of reactions on concentration, temperature and catalyst; derivation of integrated rate equationsfor the zero and first order reactions; determination of the rate constants for zeroth and first order reactions; collision theory. | AIL |
| ALCOHOLS, PHENOLS AND ETHERS | IUPAC system of nomenclature; the reactions involved in the preparation of alcohols from (i) alkenes (ii) aldehydes, ketones and carboxylic acids; the reactions involved in the preparation of phenols from (i) haloarenes (ii) benzene sulphonic acids (iii) diazonium salts and (iv) cumene; the reactions for preparation of ethers from (i) alcohols and (ii) alkyl halides and sodium alkoxides/aryloxides; physical properties of alcohols, phenols and ethers with their structures; chemical reactions of the three classes of compounds on the basis of their functional groups. |  |
| AUGUST | SURFACE CHEMISTRY | Interfacial phenomenon and its significance; definition of adsorption and its classification into physical and chemical adsorption; mechanism of adsorption; the factors controlling adsorption from gases and solutions on solids; adsorption results on the basis of Freundlich adsorption isotherms; the role of catalysts in industry; the nature of colloidal state; preparation, properties and purification of colloids; classification of emulsions and describe their preparation and properties; the phenomenon of gel formation; the uses of colloids. | AIL |
| ALDEHYDES,KETONES AND CARBOXYLIC ACIDS  ELECTROCHEMISTRY | The common and IUPAC names of aldehydes, ketones and carboxylic acids; the structures of the compounds containing functional groups namely carbonyl and carboxyl groups; the important methods of preparation and reactions of these classes of compounds; correlating physical properties and chemical reactions of aldehydes, ketones and carboxylic acids, with their structures; the mechanism of a few selected reactions of aldehydes and ketones; various factors affecting the acidity of carboxylic acids and their reactions; the uses of aldehydes, ketones and carboxylic acids  Description of electrochemical cell, difference between galvanic and electrolytic cells, standard hydrogen electrode, Nernst equation, applying Nernst equation for calculating the emf of galvanic cell and standard potential of the cell, deriving the relation between standard potential of the cell, Gibbs energy of the cell reaction and equilibrium constant, resistivity, conductivity and molar conductivity of ionic solutions, difference between ionic and electronic conductivity, method for the measurement of conductivity of electrolytic solutions and calculation of their molar conductivity, variation of conductivity and molar conductivity of solutions with change in their concentration and meaning of limiting molar conductivity, Kohlrausch law and its applications, quantitative aspect of electrolysis, |  |
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| SEPTEMBER | p- BLOCK ELEMENTS | :  General trends in the chemistry of elements of groups 15, 16,17 and 18, preparation, properties the preparation, properties and uses of dioxygen and ozone and chemistry of some simple oxides; allotropic forms of sulphur, chemistry of its important compounds and the structures of its oxoacids; the preparation, properties and uses of chlorine and hydrochloric acid; chemistry of interhalogens and structures of oxoacids of halogens; the uses of noble gases; |  |
| AMINES | **A**mines as derivatives of ammonia having a pyramidal structure; classification of amines as primary, secondary and tertiary; name amines by common names and IUPAC system; some of the important methods of preparation of amines; the properties of amines; distinguish between primary, secondary and tertiary amines; the method of preparation of diazonium salts and their importance in the synthesis of a series of aromatic compounds including azo dyes. |  |
|  | COORDINATION COMPOUNDS | The postulates of Werner’s theory of coordination compounds; the meaning of the terms: coordination entity, central atom/ ion, ligand, coordination number, coordination sphere, coordination polyhedron, oxidation number, homoleptic and heteroleptic; the rules of nomenclature of coordination compounds; writing the formulas and names of mononuclear coordination compounds; definition of different types of isomerism in coordination compounds; the nature of bonding in coordination compounds in terms of the Valence Bond and Crystal Field theories; the stability of coordination compounds. | AIL |
| OCTOBER | CHEMISTRY IN EVERY DAY LIFE: | **T**he importance of Chemistry in daily life; explanation of the term ‘chemotherapy’; the basis of classification  of drugs; drug-target interaction of enzymes and receptors; explanation of how various types of drugs function in the body; artificial sweetening agents and food preservatives; the chemistry of cleansing agents | AIL |
| BIOMOLECULES | The bio molecules like carbohydrates, proteins and nucleic acids; classification of carbohydrates, proteins, nucleic acids and vitamins on the basis of their structures; the difference between DNA and RNA; the role of bio molecules in bio system |  |
|  | d AND f BLOCK ELEMENTS | **T**he positions of the *d–* and *f-*block elements in the periodic  table; the electronic configurations of the transition (*d*-block) and the inner transition (*f*-block) elements; the relative stability of various oxidation states in terms of electrode potential values; the general characteristics of the *d–* and *f–*block elements and the general horizontal and group trends in them; the properties of the *f*-block elements and give a comparative account of the lanthanoids and actinoids with respect to their electronic configurations, oxidation states and chemical behaviour |  |