

Class- XII  
Subject : Chemistry  
Syllabus

| Month     | Name of Book                     | Chapter & Topics   | Teaching Periods | Revision Period | Practical       |
|-----------|----------------------------------|--|------------------|-----------------|-----------------|
| April     | Chemistry Class 12 <sup>th</sup> | Unit-1 : Solid State<br>Unit-2 : Solution  | 10<br>10         | 2<br>2          | A (8)           |
| May       | do                               | Unit-3 : Electro Chemistry<br>Unit-4 : Chemical Kinetics   | 10<br>8          | 3<br>2          | B (8)<br>C (6)  |
| June      | Summer Vacation                  |  |                  |                 |                 |
| July      | do                               | Unit-5 : Surface Chemistry<br>Unit-6 : General Principles<br>And Processes of Isolation of<br>Elements | 9<br>9           | 2<br>2          | D (7)<br>E (7)  |
| August    | do                               | Unit-7 : p-Block Elements<br>Unit-8 : d & f Block<br>Elements  | 16<br>08         | 6               | F (4)<br>G (4)  |
| September | do                               | Unit-9 : Co-ordination<br>compounds  | 09               | 2               | H (8)           |
| October   | do                               | Unit-10 : Halo Alkanes And<br>Halo Arenes<br>Unit-11 : Alcohols, Phenols<br>and Ethers                 | 9<br>12          | 1<br>2          | I (10)          |
| November  | do                               | Unit-12 : Aldehydes, Ketones<br>and Carboxylic Acids   | 16               | 4               | J (10)          |
| December  | do                               | Unit-13 : Amines and<br>Diazonium Salts<br>Unit-14 : Biomolecules                                      | 8<br>10          | 1<br>2          | K (8)           |
| January   | do                               | Unit-15 : Polymers<br>Unit-16 : Chemistry in<br>Everyday Life  | 8<br>8           | 2<br>2          | K (10)<br>Cont. |
| February  |                                  | Revision   |                  |                 |                 |
| March     |                                  | Exam   |                  |                 |                 |

**Class 12<sup>th</sup>**  
**Subject-Chemistry**  
**Syllabus**

**Unit-1: Solid State:**    **April**    Periods-10    Revision-2    Marks-4

Classification of solids based on different binding forces: molecular, ionic, covalent and metallic solids, Amorphous and crystalline solids (only 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 cells, Point defects, electrical and magnetic properties.

**Unit-2: Solution:**        **April**    Periods-10    Revision-2    Marks-4

Types of solutions, expression of concentration of solution of solid in liquids, solubility of gases in liquids, (Henry's law) solid solutions, colligative properties- relative lowering of vapour pressure, Raoult's law, ideal and non Ideal solutions, osmotic pressure, osmosis and its applications, depression of freezing point, elevation of boiling point, determination of molecular masses using colligative properties, Abnormal molecular masses, Van't Hoff- factor, Van't Hoff equation for colligative properties.

**Unit-3: Electrochemistry:** **May**    Periods-10    Revision-3    Marks-4

Redox reactions, conductance in electrolytic solutions, specific and molar conductivity, variation of conductivity with concentration, Kohlrausch's law, electrolysis and laws of electrolysis (only elementary Idea), Electrochemical cell, (construction, representation and working) dry cell- electrolytic cells, lead accumulator, Ni-cd cell, fuel cell, EMF of a cell, standard electrode potential, Nernst equation and its application to chemical cells, reference electrode (NHE) Relation between Gibb's free energy change and EMF of a cell, Electrochemical series and its applications, corrosion (Rusting of Iron and its methods of prevention).

Unit-4: Chemical Kinetics: May Periods-8 Revision-2 Marks-4

Rate of reaction (Average and instantaneous), factors affecting on the 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.

**June Summer Vacation 1<sup>st</sup> june to 30<sup>th</sup> june.**

Unit-5: Surface Chemistry: July Periods-9 Revision-2 Marks-3

Adsorption- Physisorption and chemisorptions, distinction between adsorption and absorption, Mechanism of adsorption, characteristics of adsorption, adsorption Isotherm, (Freundlich's Isotherm), Application of adsorption, Factors affecting adsorption of gases on solids.

Catalysis, Homogenous and Heterogenous, activity and their selectivity; enzyme catalysis, adsorption theory of Heterogenous catalysis (zeolites).

Colloidal state, colloids and crystalloids, true solution, colloidal solution and suspension. Lyophilic and Lyophobic colloids, multimolecular colloids, macromolecular and associated colloids, properties of colloids, Tyndall effect, Brownian movement, electrophoresis, coagulation, dialysis, electro dialysis, ultracentrifugation, emulsion- types of emulsions, methods of Preparation of colloids.

Unit-6: General Principles and Processes of Isolation of Elements:

**July** Periods-9 Revision-2 Marks-3

Principles and methods of extraction –concentration, oxidation, reduction- electrolytic method and refining, occurrence and principles of extraction of aluminium, copper, zinc and iron.

Unit-7: p-Block Elements: Aug. Periods-16 Revision-6 Marks-6

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  $\text{PCl}_3$ ,  $\text{PCl}_5$  oxoacids (elementary Idea only).

Group 16: General Introduction, electronic configuration, oxidation state, 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 (structure only)

Group 17: 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 (structure only)

Group 18: General introduction, electronic configuration, occurrence, trends in physical and chemical properties, uses.

Unit-8: d and f block elements:

**August.** Periods-08 Marks-5

General introduction, electronic configuration, occurrence and characteristics of transition metals, general trends in properties of the First row transition metals- metallic character, atomic size, ionic radii, melting & boiling point, Ionization enthalpy, oxidation state, colour, formation of

complex compounds, catalytic 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.

### Unit-9: Coordination compounds:

**September.** Periods-9      Revision-2      Marks-3

Coordination compounds- Introduction, difference between Coordination compounds and double salts, ligands, coordination number, colour, magnetic properties and shapes, IUPAC nomenclature of mono nuclear Coordination compounds, bonding in complex compounds, Werner's theory, VBT and CFT: Structure and stereo isomerism, importance of Coordination compounds (In qualitative inclusion, extraction of metals and biological system).

### Unit-10: Haloalkanes and Haloarenes:

**October** Periods-9      Revision-      Marks-4

Haloalkanes: Nomenclature, nature of C-X bond physical and chemical properties, mechanism of substitution reaction, optical rotation.

Haloarenes: Nature of C-X bond, substitution reaction (Directive Influence of halogen in monosubstituted compounds only)

Uses and environmental effects of – dichloromethane, trichloro methane, tetra chloro methane, Iodoform, freons, DDT.

### Unit-11: Alcohols, Phenols and Ethers:

**October** Periods-12      Revision-2      Marks-4

Alcohols: Nomenclature, methods of preparation, physical and chemical properties (Primary alcohols only), Identification of Primary, Secondary and Tertiary alcohols, Mechanism of dehydration of alcohols, uses of alcohol with special reference to ethanol and methanol.

Phenols: Nomenclature, methods of preparation, physical and chemical properties, acidic nature of phenol, electrophilic substitution reactions, uses of phenol.

Ethers: Nomenclature, methods of preparation, physical and chemical properties, uses.

Unit-12: Aldehydes, Ketones and Carboxylic acids:

**November** Periods-16      Revision-4      Marks-6

Aldehydes and Ketones: Nomenclature, nature of carbonyl group, methods of preparation of aldehyde & ketones, physical and chemical properties and mechanism of nucleophilic addition, reactivity of alpha hydrogen in aldehydes; uses.

Carboxylic acids: Nomenclature, acidic nature, methods of preparation, physical and chemical properties; uses.

Unit-13: Organic compounds containing Nitrogen:

**December** Periods-8      Revision-1      Marks-3

Amines: Nomenclature, classification, structure, methods of preparation, Physical and chemical properties, basic nature of amines.

Identification of primary, secondary and tertiary amines and uses of amines.

Diazonium salts: Preparation, chemical reaction and importance in synthetic organic chemistry.

#### Unit-14: Biomolecules:

**Decemberr** Periods-10      Revision-2      Marks-3

Carbohydrate: Classification (aldoses and ketoses) monosaccarhrides (glucose and fructose), D-L configuration, oligosaccharides (sucrose, lactose, maltose), poly saccharides (starch, cellulose, glycogen) importance.

Proteins: Elementary Idea of amino acids, peptide bond, polypeptides, proteins, primary, secondary and tertiary and quaternary structure of proteins. (qualitative Idea only) denaturation of proteins: enzymes.

Vitamins: Classification and deficiency diseases.

Nucleic acids: DNA and RNA.

#### Unit-15: Polymers:

**January** Periods-8      Revision-2      Marks-2

Classification: Natural and synthetic, method of polymerization (addition and condensation), copolymersation, some important polymers: Natural and synthetic like polythene, nylon, polyesters, Bakelite, rubber, Biodegradable and non biodegradable polymers.

#### Unit-16: Chemistry in every day life:

**January** Periods-8      Revision-2      Marks-2

1. Chemical in medicines: analgesics, tranquillizers, antiseptics, disinfectants, antimicrobials, antifertility drugs, antibiotics, antacids, antihistamines.
2. Chemicals in food; Preservatives, artificial sweetening agents, elementary Idea of antioxidants.
3. Cleansing agents: Soaps and detergents cleansing action.