

# CHEMISTRY

Unit no.	Name of unit	Focus area
1	SOME BASIC CONCEPT OF CHEMISTRY	1.5.2 Law of Definite Proportion 1.5.3 Law of Multiple Proportion 1.7 Atomic and molecular mass 1.8 Mole concept and molar mass 1.10.1 Limiting reagent
2	STRUCTURE OF ATOM	2.2.2 Rutherford's Nuclear model of atom 2.3.2 Particle nature of electromagnetic radiation (Planck Quantum theory, Photoelectric effect) 2.3.3 Atomic spectrum (Line spectrum of hydrogen) 2.4 Bohr model for Hydrogen atom 2.5.1 Dual behaviour of matter 2.5.2 Heisenberg's uncertainty principle 2.6.1 Orbitals and Quantum numbers 2.6.4 Filling of orbitals in atom 2.6.6 Stability of completely filled and half filled subshells
3	CLASSIFICATION OF ELEMENTS AND PERIODICITY IN PROPERTIES	3.3 Modern periodic law and the present form of the periodic table 3.7.1 Trends in Physical Properties
4	CHEMICAL BONDING AND MOLECULAR STRUCTURE	4.4 The valence shell electron pair repulsion (VSEPR) Theory 4.5 Valence Bond Theory 4.6.1 Types of Hybridisation 4.6.2 Other Examples of $sp^3$ , $sp^2$ and $sp$ Hybridisation 4.7 Molecular Orbital Theory 4.8 Bonding in some homonuclear diatomic molecules (Hydrogen molecule, Helium molecule and Oxygen molecule)
5	STATES OF MATTER	5.5.1 Boyle's Law (Pressure – Volume Relationship) 5.5.2 Charles' Law (Temperature – Volume Relationship) 5.5.4 Avogadro Law (Volume – Amount Relationship) 5.6 Ideal gas equation( Derivation of ideal gas equation and related problems only) 5.8 Kinetic molecular theory of gases 5.9 Behaviour of real gases: deviation from ideal gas behaviour
6	THERMODYNAMICS	6.1.1 The system and surrounding 6.1.2 Types of the system 6.1.4 The internal energy as state function [(c) The general case] 6.2.2 Enthalpy, $H$ [(a) A useful new state function, (b) Extensive and intensive properties] 6.4 Enthalpy change, $\Delta_r H$ of a reaction – reaction enthalpy [(a) Standard enthalpy of reaction, (e) Hess law of constant heat summation-statement and illustration) 6.6 Spontaneity
7	EQUILIBRIUM	7.3 Law of chemical equilibrium and equilibrium constant 7.4.1 Equilibrium constant in gaseous systems 7.10.1 Arrhenius concept of acids and bases

		7.10.2 The Bronsted-Lowry acids and bases 7.10.3 Lewis acids and bases 7.11.1 The Ionization Constant of Water and its Ionic Product 7.11.2 The pH Scale 7.12 Buffer solutions ( Definition and example only)
8	REDOX REACTIONS	8.3 Oxidation number - Types of Redox Reactions, Balancing of Redox Reactions (Half reaction method)
9	HYDROGEN	9.3.2 Commercial Production of Dihydrogen 9.5 Hydrides 9.6.5 Hard and Soft Water 9.7.5 Storage of Hydrogen peroxide (H <sub>2</sub> O <sub>2</sub> )
10	THE s-BLOCK ELEMENTS	10.1.6 Chemical Properties- Solutions in liquid ammonia 10.3 Anomalous properties of lithium 10.4 Some important compounds of sodium - Sodium Carbonate (Washing Soda), Na <sub>2</sub> CO <sub>3</sub> ·10H <sub>2</sub> O, Sodium Hydrogen carbonate (Baking Soda), NaHCO <sub>3</sub> 10.9 Some important compounds of calcium
11	THE p -BLOCK ELEMENTS	11.3.3 Diborane 11.7 Allotropes of carbon 11.8.1 Carbon monoxide 11.8.4 Silicones
12	ORGANIC CHEMISTRY – SOME BASIC PRINCIPLES AND TECHNIQUES	12.5 Nomenclature of organic compounds 12.6 Isomerism 12.9.1 Detection of Carbon and Hydrogen 12.9.2 Detection of Other Elements - (A) Test for Nitrogen 12.10.1 Carbon and Hydrogen
13	HYDROCARBONS	13.2.2 Preparation(alkanes)- From unsaturated hydrocarbons, From alkyl halide(Wurtz reaction) 13.2.3 Properties - Isomerisation, Aromatization 13.2.4 Conformations 13.3.4 Preparation(alkenes) - From alkyl halides 13.3.5 Properties - Addition of hydrogen halides 13.4.3 Preparation(alkynes) 13.4.4 Properties - Addition of water, Cyclic polymerisation 13.5.4 Preparation of Benzene 13.5.5 Properties – Nitration, Friedel-Crafts alkylation reaction
14	ENVIRONMENTAL CHEMISTRY	14.2.1 Tropospheric Pollution - Global Warming and Greenhouse Effect, Acid rain 14.3 Water pollution – Biochemical Oxygen Demand(BOD) 14.7.2 Green chemistry in day- to-day life

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