

TELANGANA STATE BOARD OF INTERMEDIATE EDUCATION, HYDERABAD

ACADEMIC YEAR 2020-2021

70% CONTENT IN VIEW OF COVID-19 PANDEMIC

INTERMEDIATE 1st YEAR CHEMISTRY SYLLABUS

Chapter 1 ATOMIC STRUCTURE	1.3 Developments leading to the Bohr's model of atom 1.4 Bohr's model for hydrogen atom 1.5.1 Dual Behaviour of matter (Brogie's equation) 1.5.2 Heisenberg's Uncertainty principle 1.6.1 quantum numbers, energies of orbitals - filling of orbitals in atom: Aufbau Principle, Pauli's exclusion principle and Hund's rule of maximum multiplicity- electronic configurations of atoms-stability of completely filled and half filled subshells.
Chapter 2 CLASSIFICATION OF ELEMENTS AND PERIODICITY OF PROPERTIES	2.3 Modern periodic law and the present form of periodic table, 2.4 Nomenclature of elements with atomic number greater than 100. 2.5 Electronic configuration of elements and the periodic table 2.6. Electronic configuration and types of elements s.p.d. and f blocks 2.7. periodic trends in properties of elements -atomic radii, ionic radii, inert gas radii, Ionization enthalpy, electron gain enthalpy, electronegativity, valency.
Chapter 3 CHEMICAL BONDING AND MOLECULAR STRUCTURE	3.1 Kossel – Lewis approach to chemical bonding 3.2 Ionic or electrovalent bond 3.3 Bond parameters 3.4 VSEPR theory: predicting the geometry of simple molecules 3.5 Valence bond theory 3.6 Hybridisation 3.7 Coordinate bond-definition with examples 3.8 Molecular orbital theory – bonding in some homonuclear diatomic molecules 3.9 Hydrogen bonding
Chapter 4 STATES OF MATTER: GASES AND LIQUIDS	4.1 Intermolecular forces 4.2 Thermal energy 4.3 Intermolecular forces Vs thermal interactions 4.4 The gaseous State. 4.5 The gas Laws 4.6 Ideal gas equation. 4.7 Grahams Law of diffusion – Dalton's law of partial pressures 4.8 Kinetic molecular theory of gases 4.9 Kinetic gas equation of an ideal gas (No derivation) – deduction of gas laws from kinetic gas equation 4.11 Behaviour of real gases: deviation from ideal gas behaviour – compressibility factor Vs pressure diagrams of real gases.
Chapter 5 STOICHIOMETRY	5.1 Importance of Chemistry-Some basics 5.3 Atomic and molecular masses- mole concept and molar mass concept of equivalent weight 5.4 Percentage composition of compounds and calculations of empirical and molecular formulae of compounds. 5.5 Stoichiometry and stoichiometric calculations. 5.7 redox reations 5.8 oxidation number concept 5.9 types of redox reactions 5.10 balancing of redox reactions-oxidation number method – of reaction(ion- electron) method.
Chapter 6 THERMODYNAMICS	6.1 Thermodynamic terms 6.2 work- enthalpy – Extensive and intensive properties - 6.3 Measurement of ΔU and ΔH : Calorimetry 6.4 Enthalpy change, $\Delta_r H$ of a reaction 6.5 Enthalpies for different types of reactions 6.6 Spontaneity 6.7 Gibbs energy change and equilibrium. 6.8 Absolute Entropy and the third law of thermodynamics
Chapter 7 CHEMICAL EQUILIBRIUM AND ACIDS BASES	7.1 Equilibrium in physical process. 7.2 Equilibrium in chemical process- dynamic equilibrium 7.3 Law of chemical equilibrium - law of mass action and equilibrium constant 7.4 Homogeneous equilibria constant in gaseous system, relation between K_p & K_c 7.5 Heterogeneous equilibria 7.6 applications of

	<p>equilibrium constant 7.8 Factors affecting Equilibria- Le-chatelier's principle- Application to industrial synthesis of ammonia and sulphur trioxide 7.9 Ionic equilibrium in solutions 7.10 Acids and bases and salts – Arrhenius, Bronsted – Lowry and Lewis concepts of acids and bases 7.12 Buffer solutions-designing of buffer solution- preparation of acidic buffer 7.13 Solubility equilibria of sparingly soluble salts solubility product constant , common ion effect on solubility of ionic salts.</p>
Chapter 8 HYDROGEN AND ITS COMPOUNDS	<p>8.1 Position of hydrogen in the periodic table 8.2 Dihydrogen-occurrence and isotopes 8.5 Hydrides: ionic, covalent and non stoichiometric hydrides 8.6 Physical and chemical properties of water, 8.8 heavy water 8.9 hydrogen as a fuel.</p>
Chapter 9 S- BLOCK ELEMENTS: ALKALI AND ALKALINE EARTH METALS	<p>Group I Elements: 9.1 Alkali metals; electronic configurations; atomic and ionic radii; ionization enthalpy; hydration enthalpy; physical properties; chemical properties; uses 9.2 General characteristics of the compounds of the alkali metals: oxides; halides; salts of oxy acids 9.3 Anomalous properties of lithium: 9.6 Alkaline earth metals; electronic configuration; ionization enthalpy; hydration enthalpy; physical properties; chemical properties; uses. 9.7 General characteristics of compounds of the alkaline earth metals 9.8 Anomalous behaviour of beryllium; its diagonal relationship with aluminum.</p>
Chapter 10 P- BLOCK ELEMENTS:GROUP-13 BORON FAMILY	<p>10.1 General introduction – electronic configuration, atomic radii, ionization enthalpy, electro negativity; physical and chemical properties 10.2 Important trends and anomalous properties of boron.</p>
Chapter 11 P - BLOCK ELEMENTS: GROUP-14 CARBON FAMILY	<p>11.1 General introduction - electronic configuration, atomic and covalent radii, ionization enthalpy, electro negativity; physical and chemical properties. 11.2 Important trends and anomalous properties of carbon 11.3 Allotropes of carbon 11.4 Uses of carbon.</p>
Chapter 12 ENVIRONMENTAL CHEMISTRY	<p>----- Nil-----</p>
Chapter 13 ORGANIC CHEMISTRY- SOME BASIC PRINCIPLES AND TECHNIQUES HYDROCARBONS	<p>13.1 General introduction 13.2 Tetravalency of Carbon: shapes of organic compounds 13.3 Structural representations of organic compounds 13.4 Classification of organic compounds 13.5 Nomenclature of organic compounds 13.6 Isomerism 13.7 Fundamental concepts in organic reaction mechanisms 13.11 HYDROCARBONS- Classification of hydrocarbons. 13.12 Alkanes – nomenclature, isomerism (structural and conformations of ethane only) 13.12.1 Preparation and properties of alkanes 13.13 Alkenes- nomenclature, structure of ethene, isomerism (structural and geometrical). Methods of preparation of alkenes physical and chemical properties of alkenes 13.14 Alkynes – nomenclature and isomerism, structure of acetylene- methods of preparation of acetylene-physical properties, chemical reactions of acetylene 13.15 Aromatic Hydrocarbons: nomenclature and isomerism- structure of benzene, resonance and aromaticity-Preparation of benzene- physical and chemical properties of benzene- directive influence of functional groups in mono substituted benzene, carcinogenicity and toxicity</p>