CBSE PORTAL

BOARD OF INTERMEDIATE EDUCATION, A.P., HYDERABAD

REVISION OF SYLLABUS

Subject - CHEMISTRY-II (w.e.f 2013-14)

CHAPTER - 1	PERIODS
Chapter 1: SOLID STATE	10
1.1 General characteristics of solid state1.2 Amorphous and crystalline solids 1.3 Classification of crystalline solids based on different binding forces (molecular, ionic, metallic and covalent solids)1.4 Probing the structure of solids: X-ray crystallography 1.5 Crystal lattices and unit cells .Bravais lattices primitive and centred unit cells 1.6 Number of atoms in a unit cell (primitive, body centred and face centred cubic unit cell)1.7 Close packed structures: Close packing in one dimension, in two dimensions and in three dimensions- tetrahedral and octahedral voids- formula of a compound and number of voids filled- locating tetrahedral and octahedral voids 1.8 Packing efficiency in simple cubic, bcc and in hcp, ccp lattice. 1.9 Calculations involving unit cell dimensions-density of the unit cell. 1.10 Imperfections in solids-types of point defects-stoichiometric and non-stoichiometric defects 1.11 Electrical properties-conduction of electricity in metals, semiconductors and insulators- band theory of metals 1.12 Magnetic properties	10

CHAPTER - 2	PERIODS
Chapter 2: SOLUTIONS	
2.1 Types of solutions 2.2 Expressing concentration of solutions- mass percentag, volume percentage, mass by volume percentage, parts per million, mole fraction, molarity and molality 2.3 Solubility: Solubility of a solid in a liquid, solubility of a gas in a liquid, Henry's law 2.4 Vapour pressure of liquid solutions: vapour pressure of liquid- liquid solutions. Raoult's law as a special case of Henry's law -vapour pressure of solutions of solids in liquids 2.5 Ideal and non-ideal solutions 2.6 Colligative properties and determination of molar mass-relative lowering of vapour pressure- elevation of boiling point-depression of freezing point-osmosis and osmotic pressure-reverse osmosis and water purification. 2.7Abnormal molar masses-van't Hoff factor	16

Downloaded from: www.cbseportal.com Courtesy: Telangana Board

				2	
Downloaded	from: www.cbsep	portal.com	Courtesy:	Telangaña	Board

	CDS	
	www.c	bseportal.co
CHAPTER - 3	PERIODS	
Chapter 3:		-
ELECTROCHEMISTRY AND CHEMICAL	22	
KINETICS		
ELECTROCHEMISTRY		
3.1 Electrochemical cells 3.2 Galvanic cells :measurement of		

3.1 Electrochemical cells 3.2 (electrode potentials 3.3 Nernst equation-equilibrium constant from Nernst equation- electrochemical cell and Gibbs energy of the cell reaction 3.4 Conductance of electrolytic solutions- measurement of the conductivity of ionic solutions-variation of conductivity and molar conductivity with concentration-strong electrolytes and weak electrolytes-applications of Kohlrausch's law 3.5 Electrolytic cells and electrolysis: Faraday's laws of electrolysis-products of electrolysis 3.6 Batteries: primary batteries and secondary batteries 3.7 Fuel cells 3.8 Corrosion of metals-Hydrogen economy

CHEMICAL KINETICS

3.9 Rate of a chemical reaction 3.10 Factors influencing rate of a reaction: dependance of rate on concentration- rate expression and rate constant- order of a reaction, molecularity of a reaction 3.11 Integrated rate equations-zero order reactions-first order reactions- half life of a reaction 3.12 Pseudo first order reaction 3.13 Temperature dependence of the rate of a reaction -effect of catalyst 3.14 Collision theory of chemical reaction rates

CHAPTER - 4	PERIODS
Chapter 4: SURFACE CHEMISTRY	
4.1 Adsorption and absorption: Distinction between adsorption and absorption- mechanism of adsorption-types of adsorption- characteristics of physisorption-characteristics of chemisorptions- adsorption isotherms- adsorption from solution phase- applications of adsorption 4.2 Catalysis:Catalysts,promoters and poisons-auto catalysis- homogeneous and heterogeneous catalysis- adsorption theory of heterogeneous catalysis- important features of solid catalysts: (a)activity (b)selectivity- shape-selective catalysis by zeolites- enzyme catalysis- characteristics and mechanism- catalysts in industry 4.3 Colloids 4.4 Classification of colloids:Classification based on physical state of dispersed phase and dispersion medium- classification based on nature of interaction between dispersed phase and dispersion medium- classification based on type of particles of the dispersed phase- multi molecular, macromolecular and associated colloids-	10





cleansing action of soaps-preparation of colloids-purification of			
colloidal solutions- properties of colloidal solutions: Tyndal effect,			
colour,Brownian movement-charge on colloidal particles,			
electrophoresis 4.5 Emulsions 4.6 Colloids Around us- application			
of colloids			

CHAPTER - 5	PERIODS
Chapter 5:	
GENERAL PRINCIPLES OF METALLURGY	12
5.1 Occurance of metals 5.2 Concentration of ores-	
levigation, magnetic separation, froth floatation, leaching 5.3	
Extraction of crude metal from concentrated ore-conversion to	
oxide, reduction of oxide to the metal 5.4 Thermodynamic	
principles of metallurgy-Ellingham diagram-limitations-	
applications-extraction of iron, copper and zinc from their oxides	
5.5 Electrochemical principles of metallurgy 5.6 Oxidation and	
reduction 5.7 Refining of crude metal-distillation,liquation	
poling, electrolysis, zone refining and vapour phase refining 5.8	
Uses of aluminium, copper, zinc and iron	

CHAPTER - 6	PERIODS
Chapter 6: p-BLOCK ELEMENTS GROUP-15 ELEMENTS	24
6.1 Occurance- electronic configuration, atomic and ionic radii, ionisation energy, electronegativity, physical and chemical properties 6.2 Dinitrogen-preparation, properties and uses 6.3 Compounds of nitrogen-preparation and properties of ammonia 6.4 Oxides of nitrogen 6.5 Preparation and properties of nitric acid 6.6 Phosphorous-allotropic forms 6.7 Phosphine- preparation and properties 6.8 Phosphorous halides 6.9 Oxoacids of phosphorous GROUP-16 ELEMENTS	27
6.10 Occurance- electronic configuration, atomic and ionic radii, ionisation enthalpy,electron gain enthalpy, electronegativity,physical and chemical properties 6.11 Dioxygen-preparation, properties and uses 6.12 Simple oxides 6.13 Ozone-preparation,properties, structure and uses 6.14 Sulphur-allotropic forms 6.15 Sulphur dioxide-preparation, properties and uses 6.16 Oxoacids of sulphur 6.17 Sulphuric acid-industrial process of manufacture, properties and uses	

GROUP-17 ELEMENTS

6.18 Occurance, electronic configuration, atomic and ionic radii, ionisation enthalpy, electron gain enthalpy, electronegativity ,physical and chemical properties 6.19 Chlorine-preparation, properties and uses 6.20 Hydrogen chloride- preparation, properties and uses 6.21 Oxoacids of halogens 6.22 Interhalogen compounds

GROUP-18 ELEMENTS

6.23 Occurance, electronic configuration, ionisation enthalpy, atomic radii electron gain enthalpy, physical and chemical properties(a) Xenon-fluorine compounds-XeF2, XeF4 and XeF6 –preparation, hydrolysis and formation of fluoro anions-structures of XeF2, XeF4 and XeF6 (b) Xenon-oxygen compounds XeO3 and XeOF4 - their formation and structures

CHAPTER – 7	PERIODS
Chapter 7: d AND f BLOCK ELEMENTS & COORDINATION COMPOUNDS d AND f BLOCK ELEMENTS	16
7.1 Position in the periodic table 7.2 Electronic configuration of the d-block elements 7.3 General properties of the transition elements (d-block) -physical properties, variation in atomic and ionic sizes of transition series, ionisation enthalpies, oxidation	
states, trends in the M^{2+}/M and M^{3+}/M^{2+} standard electrode potentials, trends in stability of higher oxidation states, chemical	
reactivity and E ^J values, magnetic properties, formation of coloured ions, formation of complex compounds, catalytic properties, formation of interstitial compounds, alloy formation 7.4 Some important compounds of transition elements-oxides and oxoanions of metals-preparation and properties of potassium dichromate and potassium permanganate-structures of chromate, dichromate, manganate and permanganate ions 7.5 Inner transition elements(f-block)-lanthanoids- electronic configuration-atomic and ionic sizes-oxidation states- general characteristics 7.6 Actinoids-electronic configuration atomic and ionic sizes, oxidation states, general characteristics and comparision with lanthanoids 7.7 Some applications of d and f block elements	
COORDINATION COMPOUNDS	
7.8 Werner's theory of coordination compounds 7.9 Definitions of some terms used in coordination compounds 7.10	

www.cbseportal.com

CBSE PORTAL



Nomenclature of coordination compounds-IUPAC nomenclature 7.11 Isomerism in coordination compounds-(a)Stereo isomerism-Geometrical and optical isomerism (b)Structural isomerismlinkage, coordination, ionisation and solvate isomerism 7.12 Bonding in coordination compounds. (a)Valence bond theory magnetic properties of coordination compounds-limitations of valence bond theory (b) Crystal field theory (i) Crystal field splitting in octahedral and tetrahedral coordination entities (ii) Colour in coordination compounds-limitations of crystal field theory 7.13 Bonding in metal carbonyls 7.14 Stability of coordination compounds

CHAPTER – 8	PERIODS
Chapter 8: POLYMERS	
8.1 Classification of Polymers -Classification based on source, structure, mode of polymerization, molecular forces and growth polymerization 8.2 Types of polymerization reactions- addition polymerization or chain growth polymerization-ionic polymerization, free radical mechanism-preparation of addition polymers-polythene, teflon and polyacrylonitrile-condensation polymerization or step growth polymerization-polyamides- preparation of Nylon 6,6 and nylon 6-poly esters-terylene- bakelite, melamine, formaldehyde polymer- copolymerization- Rubber-natural rubber-vulcanisation of rubber-Synthetic rubbers- preparation of neoprene and buna-N 8.3 Molecular mass of polymers-number average and weight average molecular masses- poly dispersity index(PDI) 8.4 Biodegradable polymers- PHBV, Nylon 2-nylon 6 8.5 Polymers of commercial importance- poly propene, poly styrene, poly vinyl chloride(PVC), urea- formaldehyde resin, glyptal, bakelite- their monomers, structures and uses	10

CHAPTER – 9	PERIODS
Chapter 9: BIOMOLECULES	
9.1 Carbohydrates - Classification of carbohydrates- Monosaccharides: preparation of glucose from sucrose and starch- Properties and structure of glucose- D,L and (+), (-) configurations of glucose- Structure of fructose Disaccharides: Sucrose- preparation, structure-Invert sugar- Structures of maltose and lactose-Polysaccharides: Structures of starch	10

Downloaded from: www.cbseportal.com Courtesy: Telangana Board



	www.cbse
cellulose and glycogen- Importance of carbohydrates 9.2	
Aminoacids: Natural aminoacids-classification of aminoacids -	
structures and D and L forms-Zwitter ions Proteins: Structures,	
classification, fibrous and globular- primary, secondary, tertiary	
and quarternary structures of proteins- Denaturation of proteins	
9.3 Enzymes: Enzymes, mechanism of enzyme action 9.4	
Vitamins: Explanation-names- classification of vitamins - sources	
of vitamins-deficiency diseases of different types of vitamins	
9.5. Nucleic acids: chemical composition of nucleic acids	
,structures of nucleic acids, DNA finger printing biological	
functions of nucleic acids 9.6 Hormones:Definition, different	
types of hormones, their production, biological activity, diseases	
due to their abnormal activities	

CHAPTER – 10	PERIODS
Chapter 10:	
CHEMISTRY IN EVERYDAY LIFE	10
10.1 Drugs and their classification: (a) Classification of drugs on the basis of pharmocological effect(b) Classification of drugs on the basis of drug action (c) Classification of drugs on the basis of chemical structure (d) Classification of drugs on the basis of molecular targets 10.2 Drug-Target interaction-Enzymes as drug targets(a) Catalytic action of enzymes (b) Drug-enzyme interaction Receptors as drug targets 10.3 Therapeutic action of different classes of drugs: antacids, antihistamines, neurologically active drugs: tranquilizers, analgesics–non- narcotic,narcotic analgesics, antimicrobials-antibiotics,antiseptics and disinfectants- antifertility drugs 10.4 Chemicals in food- artificial sweetening agents, food preservatives, antioxidants in food 10.5 Cleansing agents-soaps and synthetic detergents	
CHAPTER – 11	PERIODS
Chapter 11:	
HALOALKANES AND HALOARENES	10
11.1 Classification and nomenclature 11.2 Nature of C-X bond 11.3.Methods of preparation : Alkyl halides and aryl halides- from alcohols, from hydrocarbons (a)by free radical halogenation –(b) by electrophilic substitution (c) by replacement of diazonium group(Sand-Meyer reaction) (d) by the addition of hydrogen halides and halogens to alkenes-by halogen exchange(Finkelstein reaction) 11.4 Physical properties-melting	

Downloaded from: www.cbseportal.com Courtesy: Telangana Board



	www.cbsepc
Reactions of haloalkanes (i)Nucleophilic substitution reactions	
(a) SN^2 mechanism (b) SN^1 mechanism (c) stereochemical	
aspects of nucleophilic substitution reactions -optical activity (ii)	
Elimination reactions (iii) Reaction with metals-Reactions of	
haloarenes: (i) Nucleophilic substitution (ii)Electrophilic	
substitution and (iii) Reaction with metals11.6 Polyhalogen	
compounds: Uses and environmental effects of dichloro	
methane, trichloromethane, triiodomethane, tetrachloro	
methane, freons and DDT	

CHAPTER – 12	PERIODS
Chapter 12:	
ORGANIC COMPOUNDS CONTAINING C, H AND O (Alcohols, Phenols, Ethers, Aldehydes, Ketones and Carboxylic acids)	20
ALCOHOLS, PHENOLS AND ETHERS	
12.1 Alcohols, phenols and ethers -classification12.2 Nomenclature: (a)Alcohols, (b)phenols and (c)ethers 12.3Structures of hydroxy and ether functional groups 12.4 Methods of preparation: Alcohols from alkenes and carbonyl compounds- Phenols from haloarenes, benzene sulphonic acid, diazonium salts, cumene 12.5 Physical propertics of alcohols and phenols 12.6 Chemical reactions of alcohols and phenols (i) Reactions involving cleavage of O-H bond-Acidity of alcohols and phenols, esterification (ii) Reactions involving cleavage of C-O bond- reactions with HX, PX3, dehydration and oxidation (iii) Reactions of phenols- electrophili aromatic substitution, Kolbe's reaction, Reimer – Tiemann reaction, reaction with zinc dust, oxidation12.7 Commercially important alcohols (methanol,ethanol) 12.8 Ethers–Methods of preparation: By dehydration of alcohols, Williamson synthesis- Physical properties-Chemical reactions: Cleavage of C-O bond and electrophilic substitution of aromatic ethers. ALDEHYDES AND KETONES	
12.9 Nomenclature and structure of carbonyl group	
12.9 Nomenciature and structure of carbonyi group 12.10Preparation of aldehydes and ketones-(1) by oxidation of alcohols (2) by dehydrogenation of alcohols (3) from hydrocarbons –Preparation of aldehydes (1) from acyl chlorides (2) from nitriles and esters(3)from hydrocarbons-Preparation of ketones(1) from acyl chlorides (2)from nitriles (3)from benzene or substituted benzenes 12.11Physical properties of aldehydes	

and ketones12.12 Chemical reactions of aldehydes and ketones- nucleophilic addition, reduction, oxidation, reactions due to - Hydrogen and other reactions (Cannizzaro reaction, electrophilic substitution reaction) 12.13 Uses of aldehydes and ketones CARBOXYLIC ACIDS	CBSE PORTAL www.cbseportal.com
 12.14 Nomenclature and structure of carboxylgroup 12.15 Methods of preparation of carboxylic acids- (1)from primary alcohols and aldehydes (2) from alkylbenzenes(3)from nitriles and amides (4)from Grignard reagents (5) from acyl halides and anhydrides (6) from esters12.16 Physical properties 12.17 Chemical reactions: (i) Reactions involving cleavage of O- H bond-acidity, reactions with metals and alkalies (ii) Reactions involving cleavage of C-OH bond-formation of anhydride, reactions with PCl5, PCl3, SOCl2, esterification and reaction with ammonia (iii) Reactions involving -COOH group-reduction, decarboxylation (iv) Substitution reactions in the hydrocarbon part – halogenation and ring substitution 12.18 Uses of carboxylic acids 	

CHAPTER – 13	PERIODS
Chapter 13: ORGANIC COMPOUNDS	
CONTAINING NITROGEN	10
I. AMINES	
13.1 Structure of amines 13.2 Classification13.3 Nomenclature 13.4 Preparation of amines:reduction of nitro compounds, ammonolysis of alkyl halides, reduction of nitriles,reduction of amides, Gabriel phthalimide synthesis and Hoffmann bromamide degradation reaction.13.5 Physical properties13.6 Chemical reactions:basic character of amines, alkylation, acylation, carbyl amine reaction, reaction with nitrous acid, reaction with aryl sulphonyl chloride, electrophilic substitution of aromatic amines- bromination, nitration and sulphonation	
II. DIAZONIUM SALTS	
13.7 Methods of preparation of diazonium salts (by diazotization) 13.8 Physical properties 13.9Chemical reactions:Reactions involvin	
III. CYANIDES AND ISOCYANIDES	
13.11 Structure and nomenclature of cyanides and isocyanides 13.12 Preparation, physical properties and chemical reactions of cyanides and isocyanides	