Subject : Chemistry Class : 12

Unit	Topic / Portion deleted for 2020-2021 academic session
I	Solid State Electrical and magnetic properties, Band theory of metals ,conductors, semiconductors and insulators and *n* and *p* type semiconductors.
II	Solutions Abnormal molecular mass, Vant-Hoff factor
III	Electrochemistry Laws of electrolysis (elementary idea), dry cell—electrolytic cells and Galvanic cells; lead accumulator, fuel cells; corrosion.
IV	Chemical Kinetics Concept of collision theory (elementary idea, no mathematical treatment). Activation energy, Arrhenius equation.
V	Surface Chemistry catalysis :homogenous and heterogeneous, activity and selectivity; enzyme catalysis; emulsions — types of emulsions
VI	General Principles and Processes of Isolation of Elements *Principles and methods of extraction*— concentration, oxidation, reduction electrolytic method and refining; occurrence and principles of extraction of aluminium, copper, zinc and iron.
VII	p-Block Elements *Group 15 element* : Oxides of nitrogen (Structure -only); Phosphorous-allotropic forms; compounds of phosphorous: preparation and properties of phosphene ,halides (PCl_3, PCl_5) and oxoacids (elementary idea only). *Group 15 element* : Preparation, sulphuric acid: industrial process of manufacture.
VIII	d -and f- Block Elements Preparation and properties of $K_2Cr_20_7$ and $KMnO_4$. Lanthanoids - chemical reactivity. Actinoids - Electronic configuration, oxidation states and comparison with lanthanoids
IX	Coordination Compounds isomerism (structural and stereo) importance of coordination compounds (in qualitative analysis, extraction of metals and biological systems).
X	Haloalkanes and Haloarenes Uses and environmental effects of - dichloromethane, trichloromethane, tetrachloromethane, iodoform, freons, DDT.
XI	Alcohols, Phenols and Ethers Alcohols : uses, with special reference to methanol and ethanol.
XIII	Organic Compounds Containing Nitrogen *Diazonium salts*: Preparation, chemical reactions and importance in synthetic organic chemistry.
XIV	Biomolecules *Carbohydrates* - oligosaccharides (sucrose,-lactose, maltose), polysaccharides (starch, cellulose, glycogen): importance. *Proteins* – enzymes *Hormones* – Elementary idea (excluding structure). *Vitamins* – Classification and functions.

XV	Polymers *Classification* — Natural and synthetic, methods of polymerization (addition and condensation),. copolymerization. Some important polymers: natural and synthetic like polythene, nylon, polyesters, bakelite; rubber Biodegradable and non-biodegradable polymers.
XVI	Chemistry in Everyday Life 1. Chemicals and medicines — analgesics, tranquilizers, 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.

Weightage to content area of selected portion :

Unit	Topic / Portion Selected for 2020-2021 academic session	Mark
I	Solid State Classification of solids based on different binding forces :molecular, ionic covalent and metallic solids, amorphous and crystalline solids(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 cell, point defects.	05
II	Solutions Types of solutions, expression of concentration of solutions of solids in liquids, solubility of gases in liquids, solid solutions, colligative properties — relative lowering of vapour pressure, Raoult's law, elevation of B.P., depression of freezing point osmotic pressure, determination of molecular masses using colligative properties.	05
III	Electrochemistry Redox reactions, conductance in electrolytic solutions, specific and molar conductivity variations of conductivity with concentration, Kohlrausch's Law, electrolysis, EMF of a cell, standard electrode potential, Nernst equation and its application to chemical cells. Relation between Gibbs energy change and EMF of a cell.	06
IV	Chemical Kinetics Rate of a reaction (average and instantaneous), factors affecting rates 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).	05
V	Surface Chemistry *Adsorption* — physisorption and chemisorption; factors affecting adsorption of gases on solids; colloidal state; distinction between true solutions, colloids and suspensions; lyophillic, lyophobic multimolecular and macromolecular colloids; properties of colloids; Tyndall effect, Brownian movement, electrophoresis, coagulation.	04

VII	p-Block Elements *Group 15 element*: 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. *Group 16 elements*: General introduction, electronic configuration, oxidation states, occurrence, trends in physical and chemical properties; dioxygen, properties and uses; classification of oxides; ozone. Sulphur — allotropic forms; compounds of sulphur: preparation, properties and uses of sulphur dioxide, properties and uses, oxoacids of sulphur (structures only). *Group 17 elements*: 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's only). *Group 18 elements*: General introduction, electronic configuration, occurrence, trends in physical and chemical properties, uses.	08
VIII	d -and f- Block Elements General introduction, electronic configuration, occurrence and characteristics of transition metals, general trends in properties of the first row transition metals – metallic character, ionization enthalpy, oxidation states, ionic radii, colour, catalytic property, magnetic properties, interstitial compounds, alloy formation. *Lanthanoids* - electronic configuration, oxidation states, contraction and its consequences.	05
IX	Coordination Compounds *Coordination compounds*: Introduction, ligands, coordination number, colour, magnetic properties and shapes, IUPAC nomenclature of mononuclear coordination compounds, bonding, Werner's theory VBT, CFT.	06
X	Haloalkanes and Haloarenes *Haloalkanes* : Nomenclature, nature of C-X bond, physical and chemical properties, mechanism of substitution reactions. Optical rotation. *Haloarenes*: Nature of C-X bond, substitution reactions (directive influence of halogen for monosubstituted compounds only).	04
XI	Alcohols, Phenols and Ethers *Alcohols*: Nomenclature, methods of preparation, physical and chemical properties (of primary alcohols only); identification of primary, secondary and tertiary alcohols, mechanism of dehydration. *Phenols*: Nomenclature, methods of preparation, physical and chemical properties, acidic nature of phenol, electrophillic substitution reactions, uses of phenols. *Ethers*: Nomenclature, methods of preparation, physical and chemical properties, uses.	06

XII	Aldehydes, Ketones and Carboxylic Acids *Aldehydes and Ketones*: Nomenclature, nature of carbonyl group, methods of preparation, 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.	08
XIII	Organic Compounds Containing Nitrogen *Amines:* Nomenclature, classification, structure, methods of preparation, physical and chemical properties, uses, identification of primary secondary and tertiary amines. *Cyanides and Isocyanides* – will be mentioned at relevant places in context.	04
XIV	Biomolecules *Carbohydrates* - Classification (aldoses and ketoses), monosaccharide (glucose and fructose), DL configuration *Proteins* - Elementary idea of a amino acids, peptide bond, polypeptides, proteins, primary structure, secondary structure, tertiary structure and quaternary structure (qualitative idea only), denaturation of proteins. *Nucleic Acids*: DNA and RNA	04
	Total	**70**

Note : Question carrying 5 marks, if split up into parts, should not have more than two parts.

Weightage to form of questions :

Sl No.	Type of questions	No. of questions	Mark for each question	Total
1	Objective type	14	1	14
2	Short Answer I	11	2	22
3	Short Answer II	08	3	24
4	Long Answer	02	5	10
	Total	35		70

Scheme of option :

(i) There shall be no overall choice.

(ii) Internal choices (either/ or type) in four questions is to be given in questions of the following types:-

(a) One in two marks questions (SA I Type)

(b) One in three marks questions (SA II Type)

(c) Both in the five marks questions (LA type)

(iii) The alternate questions given by way of choice should be based on the same objective and from the same unit. It should have the same anticipated difficulty level and length of answer, as far as practicable.

Guidelines for evaluation in organic chemistry (units X, XI, XII & XIII) and numerical :

i)	**Organic Chemistry Units :**		Q × M = T
	a)	IUPAC nomenclature	2 × 1 = 2
	b)	Reasoning	3 × 2 = 6
	c)	Distinction of organic compounds	2 × 1 = 2
	d)	Name Reaction	3 × 2 = 6
	e)	Reaction mechanism	1 × 2 = 2
	f)	Word problem (conversion) covering properties and reaction of functional group.	2 × 2 = 4

ii) Numerical

Weightage of about 12 marks in total has been assigned to numericals.

Sample Blue Print : Chemistry XII

Unit	Forms of Question/ Topic	Knowledge				Understanding				Application				HOTS				Total
		Obj (1m)	SA I (2m)	SA II (3m)	LA (5m)	Obj (1m)	SA I (2m)	SA II (3m)	LA (5m)	Obj (1m)	SA I (2m)	SA II (3m)	LA (5m)	Obj (1m)	SA I (2m)	SA II (3m)	LA (5m)	
I	Solid State		2(1)									3(1)						5(2)
II	Solutions					2(2)						3(1)						5(3)
III	Electro chemistry	1(1)											5(1)					6(2)
IV	Chemical Kinetics											3(1)		2(2)				5(3)
V	Surface chemistry	1(1)		3(1)														4(2)
VII	p-Block Elements	1(1)					2(1)		5(1)									8(3)
VIII	d- and f- block elements	2(2)						3(1)										5(3)
IX	Coordination Chemistry			3(1)				3(1)										6(2)
X	Haloalkane and Haloarenes										2(1)				2(1)			4(2)
XI	Alcohols, Phenols and Ethers		2(1)				2(1)								2(1)			6(3)
XII	Aldehydes, Ketones and Carboxylic Acids		2(1)			2(2)					4(2)							8(5)
XIII	Organic Compounds Containing Nitrogen	1(1)					2(1)			1(1)								4(3)
XIV	Biomolecules			3(1)										1(1)				4(2)
	Sub-Total	**6(6)**	**6(3)**	**9(3)**		**4(4)**	**6(3)**	**6(2)**	**5(1)**	**1(1)**	**6(3)**	**9(3)**	**5(1)**	**3(3)**	**4(2)**			**70(35)**
	Total	**21(12)**				**21(10)**				**21(8)**				**7(5)**				

Note : 1) The figures in the bracket denotes the number of questions.

2) This is only a sample Blue Print. The question setter may develop his/her own Blue Print as per the question design.