D.A.V. PUBLIC SCHOOL, UPPAL'S SOUTHEND, SECTOR 49, GURGAON

ACADEMIC PLAN (2019-20)

SUBJECT: CHEMISTRY

COURSE STRUCTURE (THEORY)

Time: 3 Hours M.M : 70 marks

Unit No.	Name of the Unit	Marks
Unit I	Solutions	23
Unit II	Electrochemistry	
Unit III	Chemical Kinetics	
Unit IV	Surface Chemistry	
Unit V	General Principles and Processes of Isolation of Elements	19
Unit VI	p -Block Elements	
Unit VI	d -and f -Block Elements	
Unit VII	Coordination Compounds	
Unit VIII	Haloalkanes and Haloarenes	28
Unit IX	Alcohols, Phenols and Ethers	
Unit X	Aldehydes, Ketones and Carboxylic Acids	
Unit XI	Organic compounds containing Nitrogen	
Unit XII	Biomolecules	
Unit XIII	Polymers	
Unit XIV	Chemistry in everyday Life	

MONTH	CHAPTER	CONTENTS	NO OF PERIODS REQUIRED
March	**UNIT-10,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 in monosubstituted compounds only).Uses and environmental effects of - dichloromethane, trichloromethane, tetrachloromethane,iodoform, freons, DDT.	12
April	**UNIT-11,ALCOHOLS,PHENOLS AND ETHERS**	• Alcohols:Nomenclature,methods of preparation,physical and chemical properties of primary alcohols,identification of primary secondary and tertiary alcohols.Uses Phenols: Nomenclature,methods of preparation,physical and chemical properties,acidic nature,electrophillic substitution nreactions,uses Ethers: Nomenclature,methods of preparation,physical and chemical properties, uses	12

	UNIT12,ALDEHYDES,KETONES AND CARBOXYLIC ACIDS	• Nomenclature, nature of carbonyl group ,methods of preparation,physical and chemical properties, Mechanism of electrophilic addition,reactivity of alpha hydrogen,uses	08
May	**UNIT12,ALDEHYDES,KETONES AND CARBOXYLIC ACIDS**	• Carboxylic acids: Nomenclature,acidic nature,methods of preparation,physical and chemical properties, uses	04
	UNIT-13,ORGANIC COMPOUNDS CONTAINING NITROGEN	• Nomenclature,classification,structure,methods of preparation,physical and chemical properties, identification of primary secondary and tertiary amines, uses Diazonium salt:Preparation,Chemical applications in synthetic chemistry	12
July	**UNIT-15,BIOMOLECULES**	• Classification,Monosaccharides(glucose and fructose)D and L –configuration oligosaccharides (sucrose,maltose,lactose),polysaccharides (starch ,cellulose,glycogen),importance Proteins-Amino acids,peptide bond,proteins,polypeptides,structure of proteins,Enzymes,hormones Vitamins: Classification and functions Nucleic acids:DNA and RNA	12
	UNIT-2,SOLUTIONS	• Types of solutions, expression of	10

	UNIT-16,CHEMISTRY IN EVERYDAY LIFE	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 boiling point, depression of freezing point, osmotic pressure, determination of molecular masses using colligative properties, abnormal molecular mass, Van't Hoff factor. • Chemicals in medicines - analgesics, tranquilizers antiseptics, disinfectants, antimicrobials,antifertility drugs, antibiotics, antacids, antihistamines. Chemicals in food - preservatives, artificial sweetening agents, elementary idea of antioxidants. Cleansing agents- soaps and detergents, cleansing action.	06
August	**UNIT-3,ELECTROCHEMISTRY**	Redox reactions, conductance in electrolytic solutions, specific and molar conductivity, variations of conductivity with concentration, Kohlrausch's Law, electrolysis and law of electrolysis (elementary idea), dry cell - electrolytic cells and Galvanic cells, lead accumulator, 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, fuel cells, corrosion.	12
	UNIT-4,CHEMICAL KINETICS	• Rate of a reaction (Average and instantaneous), factors affecting rate of	10

		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, Arrhenious equation.	
	UNIT-5,SURFACE CHEMISTRY	• Adsorption - physisorption and chemisorption, factors affecting adsorption of gases on solids, catalysis,homogenous and heterogenous activity and selectivity; enzyme catalysis colloidal state distinction between true solutions, colloids and suspension; lyophilic, lyophobic multimolecularand macromolecular colloids; properties of colloids; Tyndall effect, Brownianmovement,electrophoresis,coagulation, emulsion - types of emulsions.	08
	UNIT-7,THE P-BLOCK ELEMENTS	**Group 16** Elements: General introduction, electronic configuration, oxidation states, 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 (Structures only).	06
September	**Second Term examination**		
October	**UNIT-7,THE P-BLOCK ELEMENTS**	**Group 17** Elements: General introduction, electronic configuration, oxidation states,	08

		occurrence,trends in physical and chemical properties; compounds of halogens, Preparation, properties and uses of Chlorine and Hydrochloric acid, interhalogen compounds, Oxoacids of halogens (structuresonly). **Group 18** Elements: General introduction, electronic configuration, occurrence, trends in physicaland chemical properties, uses.	
	UNIT-8,THE 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, preparation and properties of K2Cr2O7 and KMnO4 Lanthanoids - Electronic configuration, oxidation states, chemical reactivity and lanthanoid contraction and its consequences. Actinoids - Electronic configuration, oxidation states and comparison with lanthanoids.	12
	UNIT-6,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.	08
November	**UNIT-9,COORDINATION COMPOUNDS**	• Coordination compounds - Introduction, ligands, coordination number, colour, magnetic properties and shapes, IUPAC nomenclature of mononuclear coordination compounds. Bonding, Werner's theory, VBT,	12

	UNIT-15,POLYMERS	and CFT; structure and stereoisomerism, importance of coordination compounds (in qualitative inclusion, extraction of metals and biological system). • 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.	06

Recommended text books:

CHEMISTRY , published by NCERT (PART 1 & 2)