Department of Chemistry

Lesson Plan

Semester	Programme	Course and Name of the Paper	Topic	Teacher	No. Of hours
1	Hons	CC – 1 Inorganic	Extra nuclear structure of atom	SB	14
			Acid base reaction	SB, SG	12
			Redox reactions	SG	14
		CC1A Organic	Bonding and physical properties	PR	18
			General treatment of reaction mechanism I	PR	2
1		CC 1P	Acid and base titration	SB	30
			Oxidation reduction titrations	SB	
			Organic chemistry	PR	15
1	HONS	CC-2 Physical chemistry I	Kinetic theory and gaseous state	AS	20
		CC-2	Diffusion	IS	8
			Chemical Kinetics	IS	12
1	HONS	CC2 Organic	Stereochemistry I	PR	17
		CC2 P	Physical experiments	IS	30
			Organic chemistry experiments	PR	15
1	General	CC1/GE1	Kinetic theory of gases and real gases	AS	60
			Liquids	AS	
			Chemical Kinetics	IS	
			Atomic structure	SB	
			Chemical periodicity	SG	
			Acids and bases	SB, SG	
			Fundamentals of organic chemistry	PR	
			Stereochemistry	PR	
			Nucleophilic substitution and elimination	PR	
		CC1/GE1 Practical	Estimation of sodium carbonate and sodium hydrogen carbonate present in a mixture Estimation of oxalic acid by titrating with $KmnO_4$ Estimation of water of crystallization of Mohr's salt by titrating with $KMnO_4$ Estimation of Cu (II) ions iodometrically using $Na_2S_2O_3$ Estimation of Fe(II) and Fe(III) in a given mixture using $K_2Cr_2O_7$	SG, AS,MK	
2	Hons	CC3	Stereochemistry II	PR	20
			General treatment of Reaction mechanism II	PR	
			Substitution and elimination reaction	PR	

		CC3 Practical	Organic preparations Purifications of crude products Melting point of the purified product is to be noted	PR	45
2	Hons	CC4 Inorganic	Chemical Bonding-I	SG	20
			Chemical Bonding-II	SB	30
			Radioactivity	SG	10
		CC4Practical	Iodo/Iodimetric titrations Estimation of metal content in some selective samples	SB	45
2	General	CC2/GE2	Chemical Thermodynamics	IS	60
			Chemical Equilibrium	IS	
			Solutions	AS	
			Phase Equilibria	AS	
			Solids	AS	
			Aliphatic Hydrocarbons	PR	
			Error Analysis and Computer Applications	SG	
			Redox reactions	SG	
		CC2/GE2 Practical	Experiment 1: Study of kinetics of acid-catalyzed hydrolysis of methyl acetate Experiment 2: Study of kinetics of decomposition of H2O2 (Clock Reaction) Experiment 3: Study of viscosity of unknown liquid (glycerol, sugar) with respect to water. Experiment 4: Determination of solubility of sparingly soluble salt in water, in electrolyte with common ions and in neutral electrolyte (using common indicator) Experiment 5:Preparation of buffer solutions and find the pH of an unknown buffer solution by colour matching method Experiment 6: Determination of surface tension of a liquid using Stalagmometer	SG, AS,MK	45
3		CC5	Chemical thermodynamics I	IS	10
			Chemical thermodynamics II	IS	20
			System of variable composition	AS	6
			Application of Thermodynamics -I	IS	6
			Electrochemistry	AS	24
			Ionic equilibrium	AS	
			Electromotive force	AS	
		CC5 practical	Conductometric titration Study of saponification Verification of Ostwald's dilution law Potentiometric titration Datermination of solubility of AgCl Determination of heat of neutralization	IS	45
		CC6 Inorganic Chemistry	Chemical periodicity	SG	15
			Chemistry of s and p Block elements	SG	30
			Noble gases	SB	
			Inorganic polymers	SB	
			Coordination Chemisry -I	SB	15

		CC6 Practical Inorganic Chemistry	Complexometric titration Chromatography of metal ions Gravimetry	SG	45
		CC7 Organic Chemistry	Chemistry of alkenes and alkynes Carbonyl and related compounds Organometallics	PR	15
					30
				PR	5
		CC7 Organic practical	Identification of a pure organic compound Quantitative estimation	PR	45
		Sec 2 Analytical clinical biochemistry	Carbohydrates Enzymes Lipids Lipoproteins Biochemistry of disease	AS	30
				AS	
				SB	
				SB	
				PR	
		CC3/GE3	Chemical bonding and molecular structure	SB, SG	60
			Comparative study of p-block elements	SG	
			Transition elements	SB	
			Coordination chemistry	SB	
			Electrochemistry	AS	
			Aromatic hydrocarbon	PR	
			Organometallic compound	PR	
			Aryl halides	PR	
		CC3/GE3 Practicals	Qualitative semimicro analysis of mixtures containing two radicals	SB,AS,MK	45
		Sec1 Basic Analytical Chemistry	Introduction	SG	
			Analysis of soil	IS	
			Analysis of water	IS	
			Analysis of food products	IS	
			Chromatography	SG	
			Ion exchange	IS	
			Analysis of cosmetics	IS	
			Suggested Applications	SG	
			Suggested Instrumental demonstration	SG	
4		CC8 Organic	Nitrogen compounds	PR	12
			Rearrangements	PR	14
			The Logic of Organic Synthesis	PR	14
			Organic spectroscopy	PR	20
		CC8 Organic Practical	Qualitative analysis of single solid compound	PR	45
		CC9 Physical Chemistry	Application of thermodynamics -II	IS	20
			Foundation of quantum mechanica	AS	25
			Crystal structure	AS	15

		CC9 Physical chemistry Practical chemistry	Kinetic study of inversion of cane sugar Study of phase diagram Determination of partition coefficient Determination of pH of unknown solution pH metric titration of acid against strong base pH metric titration of tribasic acid against strong base	IS	45
		CC10 Inorganic chemistrty	Coordination chemistry -II	SB, SG	30
			Chemistry of d and f block elements	SB, SG	15
			Reaction Kinetics and mechanism	SG	15
		CC10P Inorganic chemistrty	Inorganic preparations	SG	45
			Instrumental techniques		
		Sec 3 Pharmaceutical Chemistry	Drugs and pharmaceuticals	AS	30
			Fermentation	SB	
				PR	
	General	CC4/GE4	Alcohols phenols and ethers	PR	60
			Carboxylic acids and derivatives	PR	
			Amines and diazonium salts	PR	
			Amino acids and carbohydrates	PR	
			Crystal field theory	SB	
			Quantum chemistry and spectroscopy	AS	
		CC4/GE4 practical	Qualitative analysis of single organic compound Identification of pure organic compound	AS,IS,MK	45
		Sec B Pharmaceutical chemistry	Drugs and pharmaceuticals	PR	30
			Fermentation		
5	Hons	CC11 Physical Chemistry	Quantum chemistry II	AS	30
			Statistical Thermodynamics		20
			Numerical Analysis		10
		CC11 Practical Physical Chemistry	Programming 1 Programming 2 Programming 3	AS	45
		CC12 Organic Chemistry	Carbocycles and Heterocycles	PR	16
			Cyclic Stereochemistry		10
			Pericyclic Reactions		8
			Carbohydrates		14
			Biomolecules		12
		CC12 Practical Organic Chemistry	Chromatographic separations Spectroscopic analysis of organic compounds	PR	45
		DSE-A-2 APPLICATIONS OF COMPUTERS IN CHEMISTRY	Computer Programming Basics (FORTRAN)	AS	20
			Introduction to Spreadsheet Software(MS Excel)		25
			Statistical Analysis		15

		DSE-A-2 Practical APPLICATIONS OF COMPUTERS IN CHEMISTRY	Use of Excel, FORTRAN, Linear and Non Linear Least squares fit to analyze chemical systems.	AS	45
		DSE-B-1: INORGANIC MATERIALS OF INDUSTRIAL IMPORTANCE	Silicate Industries	SB	16
			Fertilizers	SB	8
			Surface Coatings	SG	10
			Batteries	SB	6
			Alloys	SG	10
			Catalysis	SG	6
			Chemical explosives	SG	4
		DSE-B-1 Practical: INORGANIC MATERIALS OF INDUSTRIAL IMPORTANCE	1. Determination of free acidity in ammonium sulphate fertilizer. 2. Estimation of Calcium in Calcium ammonium nitrate fertilizer. 3. Estimation of phosphoric acid in superphosphate fertilizer. 4. Electroless metallic coatings on ceramic and plastic material. 5. Determination of composition of dolomite (by complexometric titration). 6. Analysis of (Cu, Ni); (Cu, Zn) in alloy or synthetic samples. 7. Analysis of Cement. 8. Preparation of pigment (zinc oxide).	SB	45
	General	DSE-A-2 INORGANIC MATERIALS OF INDUSTRIAL IMPORTANCE	Silicate Industries	SB	16
			Fertilizers	SB	8
			Surface Coatings	SG	10
			Batteries	SB	6
			Alloys	SG	10
			Catalysis	SG	6
			Chemical explosives	SG	4
		DSE-A-2 Practical INORGANIC MATERIALS OF INDUSTRIAL IMPORTANCE	1. Determination of free acidity in ammonium sulphate fertilizer. 2. Estimation of Calcium in Calcium ammonium nitrate fertilizer. 3. Estimation of phosphoric acid in superphosphate fertilizer. 4. Electroless metallic coatings on ceramic and plastic material. 5. Determination of composition of dolomite (by complexometric titration). 6. Analysis of (Cu, Ni); (Cu, Zn) in alloy or synthetic samples. 7. Analysis of Cement. 8. Preparation of pigment (zinc oxide).	SG	45
		Sec 2 Analytical clinical biochemistry	Carbohydrates	AS	10
			Proteins		
			Enzymes		
			Lipids	SB	10
			Lipoproteins		
			DNA		
			Biochemistry of disease: Blood and Urine	PR	10
6	Hons	CC13	Theoretical Principles in Qualitative Analysis	SB,SG	10

		Inorganic Chemistry-5	Bioinorganic Chemistry	SG	25
			Organometallic Chemistry	SG	25
		CC13 Practical Inorganic Chemistry-5	Qualitative semimicro analysis of mixtures	SB	45
		CC14 Physical Chemistry-5	Molecular Spectroscopy	IS	25
			Photochemistry and Theory of reaction rate	AS	15
			Surface phenomenon	AS	15
			Dipole moment and polarizability	IS	5
		CC14 Practical Physical Chemistry-5	Advanced physicochemical experiments	AS	45
		DSE-A-3: GREEN CHEMISTRY AND CHEMISTRY OF NATURAL PRODUCTS	Introduction to Green Chemistry	PR	4
			Principles of Green Chemistry and Designing a Chemical synthesis		16
			Examples of Green Synthesis/ Reactions and some real world cases		20
			Future Trends in Green Chemistry		12
			Alkaloids		5
			Terpenes		3
		DSE-A-3 Practical GREEN CHEMISTRY	Syntheses of fsew organic compounds using green techniques	PR	45
		DSE B-4 : Dissertation	Research /review on a topic assigned by College.	AS, IS, SG	105
	General	DSE-B1: GREEN CHEMISTRY AND CHEMISTRY OF NATURAL PRODUCTS	Introduction to Green Chemistry	PR	4
			Principles of Green Chemistry and Designing a Chemical synthesis		16
			Examples of Green Synthesis/ Reactions and some real world cases		20
			Future Trends in Green Chemistry		12
			Alkaloids		5
			Terpenes		3
		DSE-B-1 Practical GREEN CHEMISTRY	Syntheses of few organic compounds using green techniques	PR	45
		SEC -4 PESTICIDE	Introduction to pesticides	IS	5
			Structure activity relationship	IS	5

		CHEMISTRY	Synthesis and technical manufacture and uses of representative pesticides Organochlorines; Organophosphates; Carbamates; Quinones; Anilides	SB+SG	20