

POLBA MAHAVIDYALAYA
Departmental Lesson Plan 2023-2024

Name of the Department : Department of Chemistry

Name of the Programme : B.Sc.(General)

Name of the Course (Subject) :CHEMISTRY.....

Period of the Lesson Plan : July'23 to Jan'24

Academic Period	Class	Paper	Topic to be covered	No. of lectures	Name of the Teacher	Date of Internal Assessment
July'23 to Jan.'24	SEM-I	Major CHEM101-I	THEORY	45		3 rd week of Dec, 2023
			1. Atomic Structure	06	Soumya Sinha Roy	
			2. Periodic Properties	06	Do	
			3. Acid and Bases	06	Do	
			4. Fundamentals in organic chemistry	12	Dr. Leena Mandal	
			5. Properties of Gases	04	Do	
			6. Chemical Kinetics I	05	Do	
			7. Thermodynamics I	06	Do	
			Question-Answer Discussion			
			PRACTICAL	30		
			(i) Separation, Purification and Melting Point Determination	12	Soumya Sinha Roy	

		(ii) Determination of Boiling Point	06	Soumya Sinha Roy	
		(iii) Identification of a pure organic compound by chemical test(s)	12	Dr. Leena Mandal	
SEM-I	Minor CHEM102-I	THEORY	45		3 rd week of Dec, 2023
		1. Atomic Structure	06	Soumya Sinha Roy	
		2. Periodic Properties	06	Do	
		3. Acid and Bases	07	Do	
		4. Aliphatic Hydrocarbons	10	Dr. Leena Mandal	
		5. Ideal and Real Gases	05	Do	
		6. Thermodynamics I	07	Do	
		7. Chemical Kinetics I	04	Do	
		PRACTICAL	30		
		(i) Determination of Boiling Point	12	Soumya Sinha Roy	
		(ii) Identification of Pure and Organic Compounds	18	Dr. Leena Mandal	
SEM-I	Multi CHEM103-I	THEORY	45		3 rd week of Dec, 2023
		Chemistry for Household Importance			

			1. Food Chemistry	08	Soumya Sinha Roy	
			2. Drugs and Pharmaceuticals	08	Do	
			3. Vitamins	02	Do	
			4. Antibiotics	04	Dr. Leena Mandal	
			5. Glass and Ceramics	06	Do	
			6. Surface Chemistry	02	Do	
			7. Chemistry of Fuels	15	Do	
	SEM-I	SEC CHEM105-I	THEORY	45		3 rd week of Dec, 2023
			Drugs and Pharmaceuticals			
			(i) Drug Discovery.....Antifungal Agent	27	Dr. Leena Mandal	
			(ii) Antiviral Agent.....HIV-AIDS Related Drug	18	Soumya Sinha Roy	
	SEM-III	GCC-1C/ GE3	THEORY	64		2 nd week of Dec, 2023
			1. Aromatic Hydrocarbons	04	Soumya Sinha Roy	
			2. Organometallic Compounds	06	Do	
			3. Aryl Halides	03	Do	

		4. Alcohols, Phenols and Ethers:		Do
		(i) Alcohols	03	
		(ii) Phenols	03	
		(iii) Ethers	02	
		5. Carbonyl Compounds:		Dr. Leena Mandal
		Aldehydes and Ketones (aliphatic and aromatic) :	02	
		(i) Preparations	03	
		(ii) Reactions	03	
		Thermodynamics upto 1 st law	08	Dr. Leena Mandal
		Thermodynamics 2 nd law	08	Do
		Chemical Equilibrium	08	Do
		Ionic Equilibrium	08	Do
		Question-Answer Discussion	03	
		PRACTICAL	32 x 2 =64	
		Identification of a pure organic compound (Known & Unknown Sample)	16	Soumya Sinha Roy

			Identification of a pure organic compound	16	Do	
			Measurement of pH of different solutions like aerated drinks, fruit juices, shampoos and soaps (use dilute solutions of soaps and shampoos to prevent damage to the glass electrode) using pH meter and compare it with the indicator method	04	Dr. Leena Mandal	
			Practice	04	Do	
			Preparation of buffer solutions and find the pH of an unknown buffer solution by colour matching method (Sodium acetate acetic acid)	04	Do	
			Practice	04	Do	
			Study of the solubility of benzoic acid in water	04	Do	
			Practice	04	Do	
			Preparation of buffer solutions and find the pH of an unknown buffer solution by colour matching method (Ammonium chloride ammonium hydroxide)	04	Do	
			Practice	04	Do	
		SEC-1	Analytical Clinical Biochemistry	32		
			Carbohydrates, Proteins, Structure of DNA-----to Gene Therapy, Enzymes	16	Soumya Sinha Roy	
			Biochemistry of disease: A diagnostic approach by Blood/Urine analysis.	16	Dr. Leena Mandal	
SEM-V	DSE-1A		THEORY	64		1 st week of Dec, 2023
			Inorganic Chemistry	32	Dr. Leena Mandal	

		Transition Element	12		
		Coordination Chemistry	12		
		Crystal Field Theory	08		
		Analytical Chemistry:	16	Soumya Sinha Roy	
		Error Analysis	08		
		Computer Application	08		
		Industrial Chemistry	16	Soumya Sinha Roy	
		Fuels	04		
		Fertilizers	04		
		Glass & Ceramics	04		
		Cement	04		
		PRACTICAL	32 x 2 =64		

			Titration of Na ₂ CO ₃ and NaHCO ₃ mixture vs HCl using phenolphthalein and methyl orange indicators.	10	Soumya Sinha Roy	
			Practice	06	Do	
			Titration of HCl and CH ₃ COOH mixture vs NaOH using two different indicators to find the composition	10	Dr. Leena Mandal	
			Practice	06	Do	
			Estimation of Total hardness of water sample by EDTA titration.	10	Soumya Sinha Roy	
			Practice	06	Do	
			Estimation of available oxygen in pyrolusite.	10	Dr. Leena Mandal	
			Practice	06	Do	
		SEC-3	Basic & Application of Computer in Chemistry i. Mathematics ii. Computer Programming	32 16 16	Soumya Sinha Roy Dr. Leena Mandal	1 st week of Dec, 2023

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Name of the Department : Department of Chemistry

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Period of the Lesson Plan : Feb'24 to Jun'24

Academic Period	Class	Paper	Topic to be covered	No. of lectures	Name of the Teacher	Date of Internal Assessment
Feb'24 to Jun.'24	SEM-II	Major CHEM201-I	THEORY	45		3 rd week, May,2024
			1. Chemical Bonding-I	06	Dr. Leena Mandal	
			2. Redox Reactions and Precipitation Reactions	04	Do	
			3. Stereochemistry-I	06	Soumya Sinha Roy	
			4. General Treatment of Reaction Mechanism	06	Dr. Leena Mandal	
			5. Substitution and Elimination Reaction	06	Soumya Sinha Roy	
			6. Kinetic Theory of Gases	05	Dr. Leena Mandal	
			7. Liquid State	06	Do	
			8. Thermodynamics-II	06	Do	
			PRACTICAL	30		
			1. Study of kinetics of acid-catalyzed hydrolysis of methyl acetate	05	Soumya Sinha Roy	

			2. Study of kinetics of decomposition of H ₂ O ₂ by KI	05	Dr. Leena Mandal	
			3. Determination of pH of unknown strong alkali and acid solution by colour matching method	05	Do	
			4. Determination of pH of unknown buffer solution by colour matching method	05	Soumya Sinha Roy	
			5. Study of viscosity of unknown liquid (glycerol, sugar) with respect to water	05	Dr. Leena Mandal	
			6. Determination of surface tension of a liquid using Stalagmometer	05	Do	
SEM-II	Minor CHEM202-I	THEORY		45		3 rd week, May,2024
			1. Thermodynamics-II	05	Dr. Leena Mandal	
			2. Ideal Gas	05	Do	
			3. Chemical Kinetics II	05	Do	
			4. Fundamentals of Organic Chemistry	06	Do	
			5. Stereochemistry	06	Soumya Sinha Roy	
			6. Nucleophilic Substitution and Elimination Reactions	06	Do	
			7. Chemical Bonding and Molecular Structure	12	Dr. Leena Mandal	
		PRACTICAL		30		
			1. Determination of pH of unknown strong alkali and acid by colour matching method	07	Dr. Leena Mandal	

		2. Study of kinetics of acid-catalyzed hydrolysis of methyl acetate	08	Do	
		3. Estimation of Mohr's salt by titrating with KMnO_4 / $\text{K}_2\text{Cr}_2\text{O}_7$	08	Do	
		4. Estimation of sodium carbonate and sodium hydrogen carbonate in a mixture	07	Do	
SEM-II	Multi CHEM203-I	THEORY			3 rd week, May,2024
		Chemistry of Dyes, Pigments, Cosmetics and Perfumes	45		
		(i) Dyes	13	Soumya Sinha Roy	
		(ii) Pigments	12	Dr. Leena Mandal	
		(iii) Cosmetics	10	Do	
		(iv) Perfumes	10	Do	
SEM-II	SEC CHEM205-I	Basic Analytical Chemistry	45		3 rd week, May,2024
		1. General principle	08	Dr. Leena Mandal	
		2. Analysis of soil	06	Do	
		3. Analysis of water	06	Soumya Sinha Roy	
		4. Analysis of food products	06	Do	

		5. Chromatography	10	Do	
		6. Analysis of cosmetics	09	Dr. Leena Mandal	
SEM-IV	GCC-1D/ GE4	THEORY	64		2 nd week, May,2024
		Colligative Property	08	Soumya Sinha Roy	
		Phase Equilibrium	08	Do	
		EMF	08	Dr. Leena Mandal	
		Conductance	08	Do	
		Gravimetric Analysis	04	Do	
		Chromatography	04	Do	
		Volumetric Analysis	08	Do	
		Environmental Chemistry: The Atmosphere	08	Do	
		Environmental Chemistry: The Hydrosphere	08	Do	
		PRACTICAL	64		
		Distribution Law	04		
		Practice	04	Do	
		Determination of dissociation constant of a weak acid (Conductometrically)	04	Dr. Leena Mandal	
		Practice	04	Do	
		Total hardness of water by EDTA titration	08	Do	
		PH of an unknown solution by comparing color	08	Do	
		potentiometric titration: Potassium dichromate vs. Mohr's salt	08	Do	
		Practice	02	Soumya Sinha Roy	
		conductometric titration: Weak acid vs. strong base	06	Dr. Leena Mandal	

		Practice	02	Soumya Sinha Roy	
		Rate constant for the acid catalysed hydrolysis of an ester	08	Dr. Leena Mandal	
		Strength of the H ₂ O ₂ sample	04	Do	
		solubility of a sparingly soluble salt, e.g. KHTa	04	Soumya Sinha Roy	
	SEC-2	Drugs & Pharmaceuticals	32		2 nd week, May,2024
		Drug discovery, design and development; analgesics agents, antipyretic agents, anti- inflammatory agents	07	Dr. Leena Mandal	
		Antibiotics; antibacterial and antifungal agents; antiviral agents	06	Do	
		Antiviral agents	03	Do	
		Central Nervous System agents	03	Do	
		Cardiovascular, etc	02	Do	
		Antilaprosy	04	Soumya Sinha Roy	
		HIV-AIDS related drugs, etc.	04	Do	
		Question-Answer Discussion	03	Dr. Leena Mandal	
SEM-VI	DSE-1B	THEORY	64		1 st week of May, 2024
		1. Carboxylic Acids and Their Derivatives			
		a. Carboxylic acids (aliphatic and aromatic):	04	Dr. Leena Mandal	
		b. Carboxylic acid derivatives(aliphatic):	04	Do	
		2. Amines and Diazonium Salts:			

	(a) Amines (aliphatic and aromatic);	03	Do
	(b) Diazonium salts	02	Do
	(c) Nitro compounds (aromatic)	03	Do
	3. Amino Acids and Carbohydrates:		
	(i) Amino Acids	06	Soumya Sinha Roy
	(ii) Carbohydrates	08	Do
	Polymers	06	Dr. Leena Mandal
	Varnishes	02	Do
	Paints	04	Do
	Synthetic dyes	04	Do
	Drugs and pharmaceuticals	05	Do
	Food additives	03	Soumya Sinha Roy
	Fats and oils	02	Dr. Leena Mandal
	Soaps and detergents	03	Do
	Pesticides	03	Do
	Question-Answer Discussion	02	Do
	PRACTICAL	64	
	Organic Chemistry(Practical)	16	Dr. Leena Mandal
	Functional Group Organic Chemistry	16	Soumya Sinha Roy
	Estimation of saponification value of oil/fat.	12	Dr. Leena Mandal
	Practice	04	Do
	Estimation of acetic acid in commercial vinegar.	12	Do

			Practice	04	Do	
		SEC-4	Polymer Chemistry	32		
			Introduction and history of polymeric materials	08	Soumya Sinha Roy	
			Functionality and its importance	08	Dr. Leena Mandal	
			Kinetics of Polymerisation	06	Do	
			Determination of molecular weights	06	Dr. Leena Mandal	
			Properties of Polymers	04	Do	