

POLBA MAHAVIDYALAYA
Departmental Lesson Plan 2021-2022

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'21 to June'22

Academic Period	Class	Paper	Topic to be covered	No. of lectures	Name of the Teacher	Date of Internal Assessment
July'21 to Jan.'22	SEM-I	GCC-1A/ GE1	THEORY	64	Soumya Sinha Roy	24.12.21
			Organic Chemistry	32		
			1. Fundamentals of Organic Chemistry	04		
			2. Stereochemistry	04		
			3. Nucleophilic Substitution and Elimination Reactions	05		
			4. Aliphatic Hydrocarbons	02		
			Question-Answer Discussion	01		
			5. Alkanes	03		
			6. Alkenes	05		
			7. Alkynes	05		
			8. Some specific Reactions	03		

			Inorganic Chemistry	32		
			PRACTICAL	32 x 2 =64	Soumya Sinha Roy	
			Qualitative Analysis of Single Solid Organic Compound(s) [Known and Unknown Samples]	16×2 = 32		
			Inorganic Chemistry	16×2 = 32		
July'21 to Jan.'22	SEM-III	GCC-1C/ GE3	THEORY	64	Soumya Sinha Roy	16.12.21
			1. Aromatic Hydrocarbons	04		
			2. Organometallic Compounds	06		
			3. Aryl Halides	03		
			4. Alcohols, Phenols and Ethers:			
			(i) Alcohols	03		
			(ii) Phenols	03		
			(iii) Ethers	02		
			5. Carbonyl Compounds:			
			Aldehydes and Ketones (aliphatic and aromatic) :	02		
			(i) Preparations	03		

		(ii) Reactions	03	
		Thermodynamics upto 1 st law	08	
		Thermodynamics 2 nd law	08	
		Chemical Equilibrium	08	
		Ionic Equilibrium	08	
		Question-Answer Discussion	03	
		PRACTICAL	32 x 2 =64	Soumya Sinha Roy
		Identification of a pure organic compound (Known & Unknown Sample)	16	
		Identification of a pure organic compound	16	
		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	
		Practice	04	
		Preparation of buffer solutions and find the pH of an unknown buffer solution by colour matching method (Sodium acetate acetic acid)	04	
		Practice	04	
		Study of the solubility of benzoic acid in water	04	

			Practice	04		
			Preparation of buffer solutions and find the pH of an unknown buffer solution by colour matching method (Ammonium chloride ammonium hydroxide)	04		
			Practice	04		
		SEC-1	Analytical Clinical Biochemistry	32	Soumya Sinha Roy	
			Carbohydrates, Proteins, Structure of DNA-----to Gene Therapy, Enzymes	16		
			Biochemistry of disease: A diagnostic approach by Blood/Urine analysis.	16		
July'21 to Jan.'22	SEM-V	DSE-1A	THEORY	64	Soumya Sinha Roy	02.12.21
			Inorganic Chemistry	32		
			Transition Element	12		
			Coordination Chemistry	12		
			Crystal Field Theory	08		
			Analytical Chemistry:	16		
			Error Analysis	08		

		Computer Application	08	
		Industrial Chemistry	16	
		Fuels	04	
		Fertilizers	04	
		Glass & Ceramics	04	
		Cement	04	
		PRACTICAL	32 x 2 =64	Soumya Sinha Roy
		Titration of Na ₂ CO ₃ and NaHCO ₃ mixture vs HCl using phenolphthalein and methyl orange indicators.	10	
		Practice	06	
		Titration of HCl and CH ₃ COOH mixture vs NaOH using two different indicators to find the composition	10	
		Practice	06	
		Estimation of Total hardness of water sample by EDTA titration.	10	

			Practice	06		
			Estimation of available oxygen in pyrolusite.	10		
			Practice	06		
		SEC-3	Basic & Application of Computer in Chemistry i. Mathematics ii. Computer Programming	32 16 16	Soumya Sinha Roy	

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Feb'22 to Jun.'22	SEM-II	GCC-1B/ GE2	THEORY	64	Soumya Sinha Roy	17.05.22
			Kinetic Theory of Gases and Real gases	08		
			Viscosity	03		
			Surface Tension	05		
			Chemical Bonding and Molecular Structure	16		

		Chemical Kinetics	08		
		Solid State	08		
		Comparative study of p-block elements	16		
		PRACTICAL	64	Soumya Sinha Roy	
		Determination of the surface tension of a liquid or a dilute solution using Stalagmometer.	04		
		Study of the variation of surface tension of a detergent solution with concentration	04		
		Determination of the relative and absolute viscosity of a liquid or dilute solution using an Ostwald's viscometer	04		
		Study of the variation of viscosity of an aqueous solution with concentration of solute	04		
		Study the kinetics of Iodide persulphate reaction	06		
		Acid hydrolysis of methyl acetate with hydrochloric acid	04		
		Compare the strengths of HCl and H ₂ SO ₄ by studying kinetics of hydrolysis of methyl acetate	04		
		Qualitative semi-micro analysis			
		Basic Radicals: Na ⁺ , K ⁺ , Ca ²⁺ , Sr ²⁺ , Ba ²⁺ , Cr ³⁺ , Mn ²⁺ , Fe ³⁺ , Ni ²⁺ , Cu ²⁺ , NH ₄ ⁺ .	16		
		Acid Radicals: Cl ⁻ , Br ⁻ , I ⁻ , NO ₂ ⁻ , NO ₃ ⁻ , S ₂ ⁻ , SO ₄ ²⁻ , PO ₄ ³⁻ , BO ₃ ³⁻ , H ₃ BO ₃ .	16		
		Practice	02		

	SEM-IV	GCC-1D/ GE4	THEORY	64	Soumya Sinha Roy	13.05.22
			Colligative Property	08		
			Phase Equilibrium	08		
			EMF	08		
			Conductance	08		
			Gravimetric Analysis	04		
			Chromatography	04		
			Volumetric Analysis	08		
			Environmental Chemistry: The Atmosphere	08		
			Environmental Chemistry: The Hydrosphere	08		
			PRACTICAL	64	Soumya Sinha Roy	
			Distribution Law	04		
			Practice	04		
			Determination of dissociation constant of a weak acid (Conductometrically)	04		
			Practice	04		
			Total hardness of water by EDTA titration	08		
			PH of an unknown solution by comparing color	08		
			potentiometric titration: Potassium dichromate vs. Mohr's salt	08		
			Practice	02		
			conductometric titration: Weak acid vs. strong base	06		
			Practice	02		
			Rate constant for the acid catalysed hydrolysis of an ester	08		
			Strength of the H ₂ O ₂ sample	04		

		solubility of a sparingly soluble salt, e.g. KHTa	04		
	SEC-2	Drugs & Pharmaceuticals	32	Soumya Sinha Roy	
		Drug discovery, design and development; analgesics agents, antipyretic agents, anti- inflammatory agents	07		
		Antibiotics; antibacterial and antifungal agents; antiviral agents	06		
		Antiviral agents	03		
		Central Nervous System agents	03		
		Cardiovascular, etc	02		
		Antilaprosy	04		
		HIV-AIDS related drugs, etc.	04		
		Question-Answer Discussion	03		
SEM-VI	DSE-1B	THEORY	64	Soumya Sinha Roy	12.05.22
		1. Carboxylic Acids and Their Derivatives			
		a. Carboxylic acids (aliphatic and aromatic):	04		
		b. Carboxylic acid derivatives(aliphatic):	04		
		2. Amines and Diazonium Salts:			
		(a) Amines (aliphatic and aromatic);	03		
		(b) Diazonium salts	02		
		(c) Nitro compounds (aromatic)	03		

		3. Amino Acids	06	
		3.Amino Acids and Carbohydrates:		
		(ii) Carbohydrates	08	
		Polymers	06	
		Varnishes	02	
		Paints	04	
		Synthetic dyes	04	
		Drugs and pharmaceuticals	05	
		Food additives	03	
		Fats and oils	02	
		Soaps and detergents	03	
		Pesticides	03	
		Question-Answer Discussion	02	
		PRACTICAL	64	Soumya Sinha Roy
		Organic Chemistry(Practical)	16	
		Functional Group Organic Chemistry	16	
		Estimation of saponification value of oil/fat.	12	
		Practice	04	
		Estimation of acetic acid in commercial vinegar.	12	
		Practice	04	
	SEC-4	Polymer Chemistry	32	Soumya Sinha Roy
		Introduction and history of polymeric materials	08	
		Functionality and its importance	08	

			Kinetics of Polymerisation	06		
			Determination of molecular weights	06		
			Properties of Polymers	04		

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July'21 to Jan.'22	SEM-I	GCC-1A/ GE1	THEORY			24.12.21	
			Organic Chemistry	All completed			
			1. Fundamentals of Organic Chemistry				
			2. Stereochemistry				
			3. Nucleophilic Substitution and Elimination Reactions				
			4. Aliphatic Hydrocarbons				
			Question-Answer Discussion				
			5. Alkanes				
			6. Alkenes				
7. Alkynes							

			8. Some specific Reactions			
			1. Fundamentals of Organic Chemistry			
			2. Stereochemistry			
			3. Nucleophilic Substitution and Elimination Reactions			
			4. Aliphatic Hydrocarbons			
			Question-Answer Discussion			
			Inorganic Chemistry	All completed		
			PRACTICAL			
			Qualitative Analysis of Single Solid Organic Compound(s) [Known and Unknown Samples]	All completed		
			Inorganic Chemistry	All completed		
SEM-III	GCC-1C/ GE3		THEORY			16.12.21
			1. Aromatic Hydrocarbons	All completed		
			2. Organometallic Compounds	All completed		
			3. Aryl Halides	All completed		
			4. Alcohols, Phenols and Ethers:	All completed		

		(i) Alcohols	All completed		
		(ii) Phenols	All completed		
		(iii) Ethers	All completed		
		5. Carbonyl Compounds:	All completed		
		Aldehydes and Ketones (aliphatic and aromatic) :	All completed		
		(i) Preparations	All completed		
		(ii) Reactions	All completed		
		Thermodynamics upto 1 st law	All completed		
		Thermodynamics 2 nd law	All completed		
		Chemical Equilibrium	All completed		
		Chemical Equilibrium	All completed		
		Ionic Equilibrium	All completed		

			Question-Answer Discussion	All completed		
			PRACTICAL			
			Identification of a pure organic compound (Known & Unknown Sample)	All completed		
			Identification of a pure organic compound	All completed		
			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	All completed		
			Practice			
			Preparation of buffer solutions and find the pH of an unknown buffer solution by colour matching method (Sodium acetate acetic acid)	All completed		
			Practice			
			Study of the solubility of benzoic acid in water	All completed		

			Practice				
			Preparation of buffer solutions and find the pH of an unknown buffer solution by colour matching method (Ammonium chloride ammonium hydroxide)	All completed			
			Practice				
		SEC1		Analytical Clinical Biochemistry		No student	
				Carbohydrates, Proteins, Structure of DNA-----to Gene Therapy, Enzymes			
				Biochemistry of disease: A diagnostic approach by Blood/Urine analysis.			
July'21 to Jan.'22	SEM-V	DSE-1A	THEORY				02.12.21
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			Transition Element				
			Coordination Chemistry				
			Crystal Field Theory				
			Analytical Chemistry:	All completed			
			Error Analysis				

			Computer Application			
			Industrial Chemistry	All completed		
			Fuels			
			Fertilizers			
			Glass & Ceramics			
			Cement			
			PRACTICAL			
			Titration of Na ₂ CO ₃ and NaHCO ₃ mixture vs HCl using phenolphthalein and methyl orange indicators.	All completed		
			Practice			
			Titration of HCl and CH ₃ COOH mixture vs NaOH using two different indicators to find the composition	All completed		
			Practice			
			Estimation of Total hardness of water sample by EDTA titration.	All completed		
			Practice			

			Estimation of available oxygen in pyrolusite.	All completed			
			Practice				
		SEC-3		Basic & Application of Computer in Chemistry	No student		
				Mathematics			
				Computer Programming			

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			Viscosity	All completed			

			Surface Tension	All completed		
			Chemical Bonding and Molecular Structure	All completed		
			Chemical Kinetics	All completed		
			Solid State	All completed		
			Comparative study of p-block elements	All completed		
			PRACTICAL			
			Determination of the surface tension of a liquid or a dilute solution using Stalagmometer.	All completed		
			Study of the variation of surface tension of a detergent solution with concentration	All completed		

		Determination of the relative and absolute viscosity of a liquid or dilute solution using an Ostwald's viscometer	All completed		
		Study of the variation of viscosity of an aqueous solution with concentration of solute	All completed		
		Study the kinetics of Iodide persulphate reaction	All completed		
		Acid hydrolysis of methyl acetate with hydrochloric acid	All completed		
		Compare the strengths of HCl and H ₂ SO ₄ by studying kinetics of hydrolysis of methyl acetate	All completed		
		Qualitative semi-micro analysis	All completed		
		Basic Radicals: Na ⁺ , K ⁺ , Ca ²⁺ , Sr ²⁺ , Ba ²⁺ , Cr ³⁺ , Mn ²⁺ , Fe ³⁺ , Ni ²⁺ , Cu ²⁺ , NH ₄ ⁺ .	All completed		
		Acid Radicals: Cl ⁻ , Br ⁻ , I ⁻ , NO ₂ ⁻ , NO ₃ ⁻ , S ²⁻ , SO ₄ ²⁻ , PO ₄ ³⁻ , BO ₃ ³⁻ , H ₃ BO ₃ .	All completed		

			Practice				
	SEM-IV	GCC-1D/ GE4	THEORY			13.05.22	
			Colligative Property	All completed			
			Phase Equilibrium	All completed			
			EMF	All completed			
			Conductance	All completed			
			Gravimetric Analysis	All completed			
			Chromatography	All completed			
			Volumetric Analysis	All completed			
			Environmental Chemistry: The Atmosphere	All completed			
			Environmental Chemistry: The Hydrosphere	All completed			
			PRACTICAL				
			Distribution Law	All completed			
			Practice				
			Determination of dissociation constant of a weak acid (Conductometrically)	All completed			
			Practice				
			Total hardness of water by EDTA titration	All completed			
			PH of an unknown solution by comparing color	All completed			

		potentiometric titration: Potassium dichromate vs. Mohr's salt	All completed		
		Practice			
		conductometric titration: Weak acid vs. strong base	All completed		
		Practice			
		Rate constant for the acid catalysed hydrolysis of an ester	All completed		
		Strength of the H ₂ O ₂ sample	All completed		
		solubility of a sparingly soluble salt, e.g. KHTa	All completed		
	SEC-2		Drugs & Pharmaceuticals	No student	
			Drug discovery, design and development; analgesics agents, antipyretic agents, anti- inflammatory agents	No student	
			Antibiotics; antibacterial and antifungal agents; antiviral agents	No student	
			Antiviral agents	No student	
			Central Nervous System agents	No student	
			Cardiovascular, etc	No student	
			Antilaprosy	No student	

				HIV-AIDS related drugs, etc.	No student	12.05.22	
				Question-Answer Discussion	No student		
SEM-VI	DSE-1B	THEORY					
		1. Carboxylic Acids and Their Derivatives	All completed				
		a. Carboxylic acids (aliphatic and aromatic):	All completed				
		b. Carboxylic acid derivatives(aliphatic):	All completed				
		2. Amines and Diazonium Salts:	All completed				
		(a) Amines (aliphatic and aromatic);	All completed				
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		(c) Nitro compounds (aromatic)	All completed				
		3. Amino Acids	All completed				
		3.Amino Acids and Carbohydrates:	All completed				
		(ii) Carbohydrates	All completed				
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		Varnishes	All completed				

		Paints	All completed		
		Synthetic dyes	All completed		
		Drugs and pharmaceuticals	All completed		
		Food additives	All completed		
		Fats and oils	All completed		
		Soaps and detergents	All completed		
		Pesticides	All completed		
		Question-Answer Discussion	All completed		
		PRACTICAL			
		Organic Chemistry(Practical)	All completed		
		Functional Group Organic Chemistry	All completed		
		Estimation of saponification value of oil/fat.	All completed		
		Practice			
		Estimation of acetic acid in commercial vinegar.	All completed		
		Practice			

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				Introduction and history of polymeric materials	No student		
				Functionality and its importance	No student		
				Kinetics of Polymerisation	No student		
				Determination of molecular weights	No student		
				Properties of Polymers	No student		