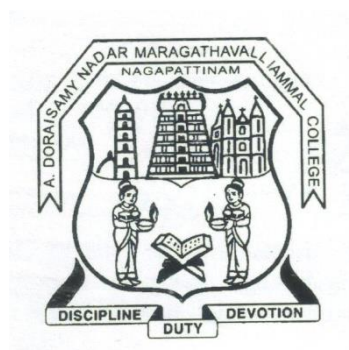


A.D.M COLLEGE FOR WOMEN (AUTONOMOUS),
(Nationally Re-accredited with 'A' Grade by NAAC- 3rd Cycle)
NAGAPATTINAM- 611 001

PG & RESEARCH DEPARTMENT OF CHEMISTRY
(For the candidates admitted from the academic year 2021-2022)



ODD SEMESTER ACADEMIC PLAN 2021-2022

A. GENERAL INFORMATION

Name of the Faculty : Ms.N.P.RUDRA SHOWDRI & Ms.M.TAMILPRIYA
Department : Chemistry
Programme : B.Sc
Programme Code : QUA
Name of the Paper : General Chemistry - I
Lecture Hours / Practical Hours : 4 Hrs / Week/ Lecture Hours

B. ABOUT THE COURSE

Course Objectives	Course Outcomes	Teaching Methodology
<ul style="list-style-type: none">To learn the periodic properties of elements and its classifications.To understand the theoretical aspects of qualitative and quantitative analyses.To understand the basics of alkanes, reactive intermediates and reaction mechanisms.To learn about the chemistry of cycloalkanes, alkenes and alkynes.To learn about the types, preparation and properties of sols, colloids and emulsions and the determination of molecular weight of macromolecules.	<ol style="list-style-type: none">To understand the address of the electron and the concept of indicators and dilution.To know the physical and chemical properties and uses of alkali metals, alkaline earth metalsRecognize the basic practical skills for the synthesis of alkenes, alkynes and cycloalkanes.Predict the geometry and hybridization of molecules in organic chemistry.Apply the concept and uses of colloids in the applied field.	<ol style="list-style-type: none">Chalk and TalkPower Pointe - Module

C. PLAN OF THE WORK

Unit/ Modules	Topic to be covered	Proposed date	Lecture Hours	Practical Hours	Remarks
Unit – I Content – 15 Hrs Assessment-3 Hrs Total- 18 Hrs	PERIODIC TABLE & PERIODIC PROPERTIES 1.Quantum Numbers, Filling up of atomic orbitals: Pauli's exclusion Principle, Aufbau Principle Hund's rule of maximum multiplicity 2.electronic configuration. Stability associated with half-filled and completely filled orbitals. 3.Periodic Properties of Elements Variation of atomic volume ,atomic and ionic radii ,ionization potential 4.electron affinity electronegativity along periods and groups Pauling scale of electronegativity. 5.Classification of elements into s,p,d and f block elements.	23.09.2021 to 07.10.2021	3hrs 3hrs 3hrs 3hrs 3hrs		
Unit – II Content – 15 Hrs Assessment-3 Hrs Total- 18 Hrs	ANALYTICAL METHODS 1.Qualitative Inorganic Analysis Dry test, Flame test, Cobalt Nitrate test, Wet test. Confirmatory test for acid radicals, interfering acid radicals elimination of interfering acid radicals. 2.Solubility product, common ion effect, complexation, oxidation reduction reactions involved in identification of anions and cations 3.separation of cations into groups Semi micro analysis of simple salts. Volumetric Analysis preparation of standard solutions Normality, Molarity and Molality by 4.titrimetric reactions acid-base, redox, precipitation and 5.complexometric titrations indicators effect of change in pH- selection of suitable indicators.	08.10.2021 to 28.10.2021	3hrs 3hrs 3hrs 3hrs		

Unit – III Content – 15 Hrs Assessment-3 Hrs Total- 18 Hrs	ALKANES, REACTIVE INTERMEDIATED & METHODS FOR REACTION MECHANISMS 1. Introduction Inductive, mesomeric, electrometric effects and hyperconjugation structure of organic molecules based on sp^3 , sp^2 and sp hybridization. Alkanes sources of alkanes general preparation general properties conformational analysis of ethane and n-butane. 2. Carbocations, Carbanions, Carbenes and Nitrenes .Generation and stability of reactive intermediates Correlation of reactivity with structure of reactive intermediates. Free radicals 3. Generation. Stability, identification methods. Free radical halogenations reactions and their mechanism. Homolytic & Heterolytic Cleavages of bonds-Characteristics of nucleophilic, electrophilic and free radical reactions. 4. Thermodynamic and kinetic aspects, Hammond's postulates, isotope effects, Energy Profile diagrams 5. Intermediate versus transition state, product analysis and its importance, crossover experiments, kinetic methods, isotopic effects.	30.10.2021 to 23.11.2021	3hrs	3hrs	3hrs	3hrs
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<p>Unit – IV Content – 15 Hrs Assessment-3 Hrs Total- 18 Hrs</p>	<p>CHEMISTRY OF CYCLOALKANES, ALKENE, DIENES AND ALKYNES 1.Preparation of Cycloalkanes Chemical Properties Relative stability of cyclopropane to cyclooctane Baeyer’s strain theory limitations Mono and di substituted cyclohexanes. 2.Alkene Nomenclature Petroleum source of alkenes and aromatics General methods of preparation of alkenes Chemical properties 3.markovinkov’s rule and peroxide effect uses elimination reactions and its mechanisms (E1,E2). 4.Dienes- Structure and Properties conjugated dienes stability and resonance electrophilic addition 1,2- addition and 1,4-addition. 5. Alkynes Nomenclature General methods of preparation Physical properties Chemical properties uses.</p>	<p>25.11.2021 to 21.12.2021</p>	<p>3hrs 3hrs 3hrs 3hrs</p>		
<p>Unit – V Content – 15 Hrs Assessment-3 Hrs Total- 18 Hrs</p>	<p>COLLOIDS AND MACROMOLECULES 1. Colloids – Definition & types of colloids- Preparation. 2.purification (dialysis, electro dialysis and ultrafiltration) and stability of colloids Gold number. 3.Properties of Colloids Kinetic, Optical and Electrical properties. Emulsions Types of emulsions, preparation, properties and applications 4.Donnan membrane equilibrium.Osmosis Reverse Osmosis and Desalination. 5.Macromolecules Molecular Weight of macromolecules determination of molecular weight by osmotic pressure and light scattering methods.</p>	<p>22.12.2021 to 31.12.2021</p>	<p>3hrs 3hrs 3hrs 3hrs</p>		

D. ACTIVITIES

Activities Name	Details
Test Assignment Quiz Seminar Tutorial Ward Meeting	Monthly Test- Unit-I (November) CIA / Mid Semester – Unit-I ,II(1/2 Unit) & IV (October) CIA / Model Examination -Unit-II(second 1/2 Unit), Unit III & Unit-V- 2 ½ Units (November) Assignment I –Unit –I (October) Assignment II– Unit –I and Unit – II (November) Two Mark Quiz Test - Unit III – Unit – IV (December) Monthly once



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A. GENERAL INFORMATION

Name of the Faculty : Dr.N.Prabha&Ms.A.Flora (I Semester)

Department : Chemistry

Programme : B.Sc

Programme Code : QUBY

Name of the Paper : Volumetric Analysis

Lecture Hours / Practical Hours : 3Hrs / Week / Practical Hours

B. ABOUT THE COURSE

Course Objectives	Course Outcomes	Practical Methodology
		<ul style="list-style-type: none">• Students has to be in time for the laboratory• Students are not allowed into the lab without prepared Observation Note.• A student has to complete the practical and calculations at the stipulated time give to them.• Students have to receive the signature in the observation note on the same day or on or before entering the next practical class.

C. PLAN OF THE WORK

Unit / Modules	Topic to be covered	Proposed date	Lecture Hours	Practical Hours	Remarks
	Volumetric Analysis – Basic Concepts	28.09.2021 to 13.10.2021		3Hrs	
	Volumetric Analysis - Concentrations Units			3Hrs	
	Estimation of Oxalic Acid	08.11.2021 to 01.12.2021		3Hrs	
	Estimation of Hydrochloric acid		-	3Hrs	
	Estimation of Sodium Carbonate			3Hrs	
	Estimation of Ferrous Sulphate			3Hrs	

	Estimation of Calcium	21.02.2022 to 11.03.2022	-	3Hrs	
	Estimation of Ferric ion – Internal Indicator			3Hrs	
	Estimation of Ferric ion- External Indicator			3Hrs	
	Estimation of Potassium Permanganate	21.03.2022 to 06.04.2022		3hrs	
	Estimation of Copper			3hrs	
	Estimation of Magnesium			3hrs	
	Estimation of Calcium- EDTA	18.04.2022 to 05.05.2022		3hrs	
	Estimation of Total hardness			3hrs	
	Estimation of Saponification value of an oil			3hrs	

D. ACTIVITIES

Activities Name	Details
Repetition Class Observation Correction Record Correction Mid Semester Model Practical	06.05.2022 to 10.05.2022

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A. GENERAL INFORMATION

Name of the Faculty : Mrs. M.Sivagamasundari
Department : Chemistry
Programme : B.Sc
Programme Code : RBQD
Name of the Paper : General Chemistry -III
Lecture Hours / Practical Hours : 5 Hrs / Week/ Lecture Hours

B. ABOUT THE COURSE

Course Objectives	Course Outcomes	Teaching Methodology
<ol style="list-style-type: none">To understand about shapes of inorganic moleculesTo learn about the chemistry of alkynes and alkyl halides.To know about Liquid state.To acquire knowledge of gaseous state	<p>Students learn about</p> <ol style="list-style-type: none">Structure, shape and compounds of Carbon and Nitrogen groups elements.Formation of compounds and its nature of Oxygen and Interhalogen compounds.Aware of the fundamental aspects of stereochemistry and its influence on chemical properties.Students shall demonstrate competence in collecting and interpreting data from their knowledge on analytical techniques.Properties, packing arrangement and structural determination of solids.	<ol style="list-style-type: none">Chalk and TalkPower Pointe - Module

C. PLAN OF THE WORK

Unit/ Modules	Topic to be covered	Proposed date	Lecture Hours	Practical Hours	Remarks
Unit I Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs	<ol style="list-style-type: none">Metallurgy: Occurance of metals – concentration of ores – froth floatation, magnetic separation, calcination, roasting, smelting, flux, aluminothermic process, purification of metals- electrolysis, zone refining, van Arkel de- Boer process.Extraction of Al and Pb- alums&alloys of Al.Chemistry of oxides of carbon- CO,CO₂.Allotropic forms of carbon.Compounds of Nitrogen - NH₃,NH₂,H₂NOH,hydrazoic acid.N₂- Cycle, fixation of N₂,Compounds of	11.08.2021 to 09.09.2021	4hrs 2hrs 2 hrs 2hrs 2hrs 2hrs 1hr		

	Phosphorous- PH ₃ and P ₂ O ₅ .				
Unit II Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs	<p>1.Peracids of sulphur, Thionic acids- preparation, properties, structure and uses.</p> <p>2.Sodium thiosulphate- preparation, properties, structure and uses.</p> <p>3.Classification of oxides- acidic, amphoteric, neutral oxides, peroxides and superoxides.</p> <p>4. Interhalogen compounds- Preparation, Properties and structure.</p> <p>5.Pseudohalogens - Oxyacids of halogens.</p> <p>6. Pseudohalogens - Polyhalides and basic nature of iodine.</p>	21.09.2021 to 11.10.2021	2 hrs 2 hrs 3 hrs 4 hrs 2 hrs 2 hrs		
Unit III Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs	<p>STEREOCHEMISTRY</p> <p>1.Principles of symmetry – symmetry elements (C_n, C_i and S_n) -asymmetry and dissymmetry – isomerism – constitutional isomers</p> <p>2.Stereoisomers – enantiomers – diastereomers geometrical isomerism – meso and dl compounds - conventions used in stereochemistry:</p> <p>3.Newman, Sawhorse and Fischer notations and their interconversions.</p> <p>4.Nomenclature, correlation of configuration – Cahn-Ingold-Prelog rules for simple molecules - R,S and D,L notations to express configurations - chirality - optical isomerism - optical activity – polarimeter – specific rotation stereochemistry of allenes and spiranes</p> <p>5.Atropisomerism- erythro and threo conventions – stereoselectivity, stereospecificity in organic reactions with examples. Resolution of racemic mixture– Walden Inversion – conformational analysis of cyclohexane - asymmetric</p>	13.10.2021 to 12.11.2021	3 hrs 3 hrs 3hrs 3hrs 2 hrs 1 hrs		

	induction.				
Unit IV Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs	GASEOUS STATE 1.Gases – Boyle’s law, Charle’s law and Avagadro’s law- ideal gas equation.Real Gases deviation from ideal behaviour – van der Waals equation of states-derivation – significance of critical constants- law of corresponding states- compressibility factor. 2.Inversion temperature and liquefaction of gases- Linde and Claude demagnetization methods. Maxwell’s distribution of molecular velocitie (Derivation not needed). 3.Types of molecular velocities- mean, most probable and root mean square velocities-Inter relationships. Collision diameter, mean free path and collision number.	12.11.2021 to 14.12.2021	3 hrs 3 hrs 3hrs 3hrs 2 hrs 1 hrs		
Unit V Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs	1. Qualitative Inorganic Analysis-elimination of interfering acid radicals. 2.Solubility product, common ion effect, complexation, oxidation- reduction reactions. 3.Identification of anions and cations. 4. Separation of cations into groups. 5. Semi micro analysis of simple salts.	15.12.2022 to 23.12.2022	3 hrs 3hrs 2 hrs 1 hrs		

D.ACTIVITIES

Activities Name	Details
Test	Monthly Test- Unit-I (August) CIA / Mid Semester – Unit-I ,II(1/2 Unit) & IV (September) CIA / Model Examination -Unit-II(second 1/2 Unit), Unit III & Unit-V- 2 ½ Assignment I –Unit –I (September) Assignment II– Unit –II (October)
Assignment	Two Mark Quiz Test - Unit I – Unit – V (October) Unit –V (October)
Quiz	Monthly once
Seminar Tutorial Ward Meeting	



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A. GENERAL INFORMATION

Name of the Faculty : Mrs.M.Sivagamasundari & A.Flora
Department : Chemistry
Programme : B.Sc
Programme Code : BQBY
Name of the Paper : Semi micro Analysis Practical
Lecture Hours / Practical Hours : 2Hrs / Week / Practical Hours

B. ABOUT THE COURSE

Course Objectives	Course Outcomes	Practical Methodology
		<ul style="list-style-type: none">• Students has to be in time for the laboratory• Students are not allowed into the lab without prepared Observation Note.• A student has to complete the practical and calculations at the stipulated time give to them.• Students have to receive the signature in the observation note on the same day or on or before entering the next practical class.

C. PLAN OF THE WORK

Unit / Modules	Topic to be covered	Proposed date	Lecture Hours	Practical Hours	Remarks
	SEMIMICRO INORGANIC QUALITATIVE ANALYSIS Analysis of a mixture containing two cations and two anions of which one will be interfering acid radical. Semimicro methods using the conventional scheme with hydrogen sulphide may be adopted. Cations to be studied: Lead, Copper, Bismuth, Cadmium, Iron, Aluminium, Zinc, Manganese, Cobalt, Nickel, Barium, Calcium, Strontium, Magnesium and Ammonium. Anions to be studied :	23.08.2021 to 07.09.2021 08.10.2021 to 23.11.2021 03.12.2021 to 21.12.2021		2 Hrs 2Hrs 2hrs 2hrs 2hrs 2hrs	

	Carbonate, Sulphide, Sulphate, Nitrate, chloride, Bromide, Fluoride, Borate, Oxalate and Phosphate				
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D.ACTIVITIES

Activities Name	Details
Repetition Class Observation Correction Record Correction Mid Semester Model Practical	21.12.2021 to 27.12.2021



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A. GENERAL INFORMATION

Name of the Faculty : Ms.N.P.RUDRA SHOWDRI
Department : Chemistry
Programme : BSc
Programme Code : QUE1
Name of the Paper : NME- Chemistry of Consumer Products
Lecture Hours / Practical Hours : 2 Hrs / Week / Lecture Hours

B.ABOUT THE COURSE

Course Objectives	Course Outcomes	Teaching Methodology
<ul style="list-style-type: none">• To gain knowledge about constituents and functions of Paint and Varnish.• To learn about preparation and applications of various dyes.• To know the preparation and uses of synthetic plastics, Resins and Rubber.	<p>On completion of the Course, Students should be able to</p> <ul style="list-style-type: none">• To know the preparation and applications of different types of soap.• To learn about the composition of Shampoos, Conditioners, Powder, Nail polish and Lipstick.	<ol style="list-style-type: none">1. Chalk and Talk2. Power point.3. e- Module

C. PLAN OF THE WORK


Unit / Modules	Topic to be covered	Proposed date	Lecture Hours	Practical Hours	Remarks
Unit I Content- 4 Hrs, Assessment - 2 Hrs Total - 6 Hrs	SOAPS AND DETERGENTS 1. Manufacture of soaps 2. Formulation of toilet soaps – different ingredients used 3. Soft soaps, shaving soaps and creams. 4. Anionic detergents – manufacture and Cationic detergents – manufacture and	11.08.2021 to 26.08.2021	1 hr 1hr 1hr 1hr		

<p>Unit II Content- 4 Hrs, Assessment - 2 Hrs Total - 6 Hrs</p>	<p>COSMETICS</p> <ol style="list-style-type: none"> 1. Shampoos – different kinds of shampoos – anti – dandruff, anti – lice, herbal and baby shampoos 2. Manufacture of Hair dye 3. Conditioners preparation 4. skin powder, Nail polish and lipsticks. 	<p>27.08.2021 to 17.09.2021</p>	<p>1hr 1hr 1hr 1hr</p>	<p>-</p>	<p>-</p>
<p>Unit III Content- 4 Hrs, Assessment - 2 Hrs Total - 6 Hrs</p>	<p>PAINTS AND VARNISHES</p> <ol style="list-style-type: none"> 1. Constituents and their function of paints and varnishes 2. Types and applications of paints and varnishes 	<p>24.09.2021 to 28.10.2022</p>	<p>2hrs 2hrs</p>		
<p>Unit IV Content- 4 Hrs, Assessment - 2 Hrs Total - 6 Hrs</p>	<p>DYES</p> <ol style="list-style-type: none"> 1. Classification – preparation and uses of alizarin. 2. Classification – preparation and uses of Indigo 3. Classification – preparation and uses of Methyl orange 4. Classification – preparation and uses of Phenolphthalein and Malachite green. 	<p>21.10.2021 to 15.11.2021</p>	<p>1hr 1hr 1hr 1hr</p>		

Unit V Content- 4 Hrs, Assessment - 2 Hrs Total - 6 Hrs	Plastics – Resins and Rubber				
	1. Synthetic resins and plastics		1hr		
	2. synthetic polymers		1hr		
	3. important basic plastics	17.11.2021 to 14.12.2021	1hr		
4. Uses of rubber, vulcanization		1hr			

D.ACTIVITIES

Test	Monthly Test- Unit-I (November) CIA / Mid Semester – Unit-I ,II(1/2 Unit) & IV (November) CIA / Model Examination -Unit-II(second 1/2 Unit), Unit III & Unit-V- 2 ½ Units (December) Assignment I –Unit –I (November) Assignment II– Unit –I and Unit – II (December)
Assignment	Two Mark Quiz Test - Unit III – Unit – IV (December)
Quiz	Monthly once
Seminar Tutorial Ward Meeting	


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A. GENERAL INFORMATION

Name of the Faculty : Mrs.S.Malathy & Mrs. A. Rakini
Department : Chemistry
Programme : B.Sc
Programme Code : QUK
Name of the Paper : Inorganic Chemistry
Lecture Hours / Practical Hours : 5 Hrs / Week/ Lecture Hours

B. ABOUT THE COURSE

Course Objectives	Course Outcomes	Teaching Methodology
<ul style="list-style-type: none">Students understand the concept of isomerism in coordination compounds their structural and magnetic properties.Students study about the theories of coordination compounds.Students learn about types of reactions of complexes and their mechanism and learn about Jahn teller effect and chelate effect.Students learn about the preparation, properties, structure, bonding and uses of carbonyl, borides, carbides and nitrides.Students learn about classification, preparation, properties, structure, magnetic properties and application of dipole moment of Nitrosyl Compounds	<p>On completion of the course the learner will be able</p> <ul style="list-style-type: none">Understand the types of ligands & isomerism.Recognize the splitting of orbitals.Know the importance of coordination compounds.Recognize the structure and bonding of carbonyls and binary metallic compounds.Predict the magnetic properties of coordination compounds	<ol style="list-style-type: none">Chalk and TalkPower point.e- Module

C. PLAN OF THE WORK

Unit / Modules	Topic to be covered	Proposed date	Lecture Hours	Practical Hours	Remarks
Unit I Content- 12 Hrs, Assessment -3 Hrs Total - 15 Hrs	COORDINATION COMPOUNDS-I 1. Introduction- Types of ligands: unidentate, bidentate and poly dentate ligands, chelating ligands and chelates- IUPAC nomenclature of coordination compounds. 2. Isomerism in coordination compounds: Structural isomerism, hydrate isomerism,	09.08.2021 to 23.08.2021	2hr 2hrs	-	-

	<p>3. co ordination isomerism, ionisation isomerism, linkage isomerism, coordination position isomerism.</p> <p>4. Stereoisomerism: Geometrical isomerism of four and six coordinate complexes, optical isomerism of four and six coordinate complexes,</p> <p>5. Werner and sidgwick theories, methods of detecting complex formation.</p>		2hrs		
			3hr		
			3hrs		
<p>Unit II Content- 12 Hrs, Assessment -3 Hrs Total - 15 Hrs</p>	<p>COORDINATION COMPOUNDS-II</p> <ul style="list-style-type: none"> ○ Theories of coordination compounds: ○ Valence bond theory, limitations of valence bond theory, crystal field theory – splitting of d orbitals in octahedral, tetrahedral and square planar fields, ○ CFSE, factors affecting CFSE, colour, geometry and magnetic properties of coordination compounds, Jahn – ○ Teller distortion (an elementary idea). <p>Molecular orbital theory : Molecular orbital diagram for $[\text{Co}(\text{NH}_3)]^{3+}$.</p> <ul style="list-style-type: none"> ○ Ligand field theory. (An elementary treatment only). 	25.08.2021 To 14.09.2021	2hrs		
			2hrs		
			2hrs	-	-
			3hrs		
			3hrs		

<p>Unit III Content- 12Hrs, Assessment -3 Hrs Total - 15 Hrs</p>	<p>COORDINATION COMPOUNDS-III 1.Labile and inert complexes, stability of coordination compounds- 2.thermodynamic and kinetic stability, relationship between stepwise formation constant and overall formation constant, 3.factors affecting the stability of complexes. 4.Unimolecular and bimolecular nucleophilic substitution reactions in octahedral and square planar complexes, trans effect- theories of trans effect and applications. 5.A few biologically important coordination compounds: Chlorophyll, haemoglobin and vitamin B₁₂</p>	<p>15.09.2021 to 01.10.2021</p>	<p>3hrs 3hrs 2hrs 2hrs</p>		
<p>Unit IV Content- 12 Hrs, Assessment -3 Hrs Total - 15 Hrs</p>	<p>CARBONYLS AND BINARY METALLIC COMPOUNDS 1. Metal carbonyls: Mono and binuclear carbonyls of Ni, Fe, Cr, Co and 2. Mn- preparation, structure, reactions, bonding and uses. 3. Structure and bonding in metal alkenyl and metal alkyl complexes of [PtCl₃(C₂H₄)]-, 4. [Co(CO)₆(RC CR)] and ferrocene. 5. Binary metallic compounds: borides, carbides, 6. hydrides and nitrides-classification, preparation, properties and uses.</p>	<p>04.10.2021 to 26.10.2021</p>	<p>3hrs 2hrs 2hrs 2hrs 2hrs</p>	<p>-</p>	<p>-</p>
<p>Unit V Content- 12Hrs, Assessment -3 Hrs Total - 15 Hrs</p>	<p>NITROSYL COMPOUNDS AND MAGNETIC PROPERTIES 1. Nitrosyl compounds: Classification- nitrosyl chloride and 2. sodium nitroprusside-preparation,properties and structure. 3. Magnetic properties-</p>	<p>08.11.2021 to</p>	<p>2hrs 2hrs</p>		

	meaning of the terms- magnetic susceptibility- magnetic moment- 4. types of magnetism-Gouy balance-applications of magnetic properties 5. Dipolemoment- determination, application in the study of simple inorganic molecules.	15.12.2021	3hrs		
			3hrs		
			2hrs		

D. ACTIVITIES

Activities Name	Details
Test	Monthly Test- Unit-I (August) CIA / Mid Semester – Unit-I ,III (first ½ portion)& II - 2 ½ Unit(November) CIA / Model Examination -Unit-III(Second 1/2 Unit) , Unit IV & Unit-V- 2 ½ Units (December)
Assignment	Assignment I –Unit –I (August) Assignment II– Unit –II and Unit – IV (October)
Quiz	Two Mark Quiz Test - Unit I – Unit – V (November)
Seminar	
Tutorial Ward Meeting	Unit –III (December) Monthly once

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A. GENERAL INFORMATION

Name of the Faculty : Miss. R.MAHESWARI
Department : Chemistry
Programme : B.Sc.,
Programme Code : BQH
Name of the Paper : Organic Chemistry
Lecture Hours / Practical Hours: 5 Hrs / Week/ Lecture Hours

B. ABOUT THE COURSE

Course Objectives	Course Outcomes	Teaching Methodology
<ul style="list-style-type: none">• A Comprehensive knowledge and understanding on the carbonyl compounds and Nitrogen compounds.• To acquire knowledge in carboxylic acids.• Specialized students with in depth knowledge in functional group interconversion.• Students acquire the knowledge about heterocyclic compounds and chemistry of dyes.• Students learn about redox reagents and their application.	<p>On completion of the course the learner will be able</p> <p>Learn about the reduction and oxidation reaction of carbonyl compounds Understand the preparation, properties and uses of carbonyl compounds Know about the chemistry of Nitrogen compounds Predict the structure of Heterocyclic compounds Aware the types of oxidizing and reducing agents</p>	<ol style="list-style-type: none">1. Chalk and Talk2. Power Point3. e - Module

C.PLAN OF THE WORK


Unit/ Modules	Topic to be covered	Proposed date	Lecture Hours	Practical Hours	Remarks
Unit I Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs	CHEMISTRY OF CARBONYL COMPOUNDS Nomenclature structure of carbonyl compounds- chemical properties. Nucleophilic addition mechanism at carbonyl group (eg: HCN,ROH,RNH ₂) . Acidity of alpha hydrogen- keto- enol Tautomerism (proof for the two forms). Reduction and oxidation reactions of carbonyl compounds- paraformaldehyde,metaformaldehyde. Uses of aliphatic carbonyl compound- Claisen condensation-Aldol	09.08.2021 to 23.08.2021	4hrs 2hrs 2 hrs 2hrs 2hrs 1hr		

	<p>condensation-Robinson annulations. General methods of preparation of aromatic carbonyl compounds-physical and chemical properties-uses. Effect of aryl group on the reactivity of carbonyl group.</p>				
<p>Unit II Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs</p>	<p>CHEMISTRY OF CARBOXYLIC ACIDS</p> <p>Nomenclature- Acidity of carboxylic acids based on substituent effect-comparison of acid strength of halogen substituted acetic acids-.</p> <p>Acid strengths of substituted benzoic acids- Acid derivatives-Nucleophilic substitution mechanism at acyl carbon.</p> <p>Preparation, properties and uses of acid derivatives: acid chloride, anhydrides, Esters, amides-chemistry of compounds containing active methylene group.</p> <p>synthesis and synthetic applications of aceto acetic ester and malonic ester.</p> <p>Preparation of dicarboxylic acid- physical and chemical properties-uses. Introduction to oils and fats-fatty acids-manufacture of soap-mechanism of cleaning action of soap.</p>	<p>25.08.2021 To 14.09.2021</p>	<p>2 hrs</p> <p>2 hrs</p> <p>3 hrs 4 hrs 2 hrs 2 hrs</p>		
<p>Unit III Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs</p>	<p>CHEMISTRY OF NITROGEN COMPOUNDS</p> <p>Nomenclature-nitroalkanes-alkylnitrites-differences-aromatic nitro compounds - preparation and reduction of nitro benzene under different conditions, TNT.</p> <p>Amines- effect of substituent's on basicity of aliphatic and aromatic amines- Reactions of amino compounds (primary, secondary, tertiary and quaternary amine compounds).</p> <p>Mechanism of carbylamine's reaction, diazotization and comparison of aliphatic and aromatic amines.</p> <p>Diazonium compounds – preparation and synthetic applications of diazomethane, benzene diazonium chloride and diazo acetic ester.</p>	<p>15.09.2021 to 01.10.2021</p>	<p>3 hrs</p> <p>3hrs</p> <p>2 hrs</p> <p>1 hrs</p>		
<p>Unit IV Content- 15 Hrs, Assessment -3 Hrs</p>	<p>CHEMISTRY OF HETEROCYCLIC COMPOUNDS AND DYES</p> <p>Introduction- nomenclature of heterocyclic compounds having not</p>		<p>3 hrs</p> <p>3hrs</p>		

Total - 18 Hrs	<p>morethan two heteroatoms such as oxygen, nitrogen and sulphur-structure, synthesis and properties of furan, pyrrole, thiophene. Pyridine- structure, preparation-compare the basicity of pyridine with pyrrole and amines.</p> <p>Quinoline- structure and Skraup synthesis. Isoquinoline- structure and Napieralski synthesis and Indole-structure and Fischer- indole syntheses.</p> <p>Dyes-colorandconstitution-chromophore-auxochrome-classificationaccordingtoapplication and structure- preparation and uses of – methyl orange, fluorenscein, Alizarin, Indigo and malachite green dyes.</p>	04.10.2021 to 26.10.2021	2 hrs 1 hrs		
Unit V Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs	<p>Oxidation: Osmium tetroxide-Chromyl chloride. Ozone-DDQ-Dioxiranes. Lead tetraacetate-selenium dioxide DMSO either with Ac₂O oroxalylchloride-Dess- Martinreagent.</p> <p>Reduction:Catalytic hydrogenation using Wilkinson Catalyst Reduction with LAH, NaBH₄ Tritertiarybutoxy aluminum hydride, NaCNBH₃, hydrazines</p>	08.11.2021 to 15.12.2021	3 hrs 3hrs 2 hrs 1 hrs		

D.ACTIVITES

Activities Name	Details
Test	Monthly Test- Unit-I (August) Monthly Test – Unit – II (September) CIA / Mid Semester – Unit-I ,II& III (first ½ portion)- 2 ½ Unit(October) CIA / Model Examination -Unit-III(Second 1/2 Unit) Unit IV & Unit-V- 2 ½ Units (November)
Assignment	Assignment I –Unit –I and Unit –II (September) Assignment II– Unit –III and Unit – IV (October)
Quiz	Two Mark Quiz Test - Unit I – Unit – V (October)
Seminar	Unit –V (October)
Tutorial Ward Meeting	Monthly once


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A. GENERAL INFORMATION

Name of the Faculty : Dr. N. Prabha
Department : Chemistry
Programme : B.Sc
Programme Code : BQI
Name of the Paper : Physical Chemistry – I
Lecture Hours / Practical Hours : 6 Hrs / Week / Lecture Hours.

B. ABOUT THE COURSE

Course Objectives	Course Outcomes	Teaching Methodology
<ul style="list-style-type: none">• Students gain knowledge in Photo chemistry and Group theory.• Students understand the efficient way of converting work into energy and vice versa from the thermodynamic perspective.• Students get to know the energy changes involved in the natural and the industrial processes – that are the applications of thermodynamics.• Students understand the method of enhancing the efficiency of the certain industrial processes.• Students learn about solutions, their types, colligative properties, effect of added salt and molecular weight determination.	<ul style="list-style-type: none">• Learn about Photochemistry• Predict the symmetry elements and symmetry operations• Apply the concept of Second law of thermodynamics• Know the partial molar quantities.• Recognize the component system using phase rule.	<ol style="list-style-type: none">1. Chalk and Talk2. Power point.3. e- Module

C. PLAN OF THE WORK

Unit / Modules	Topic to be covered	Proposed date	Lecture Hours	Practical Hours	Remarks
Unit I Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs	1.Consequences of light absorption- Jablonski diagram- radiative and non-radiative transitions. Lambert's Beer law, quantum efficiency.	09.08.2021 to 01.09.2021	3 hrs	-	-
	2.Photochemical reactions- Comparison between thermal and photochemical reactions. Photosensitization and quenching. Fluorescence, Phosphorescence and chemiluminescence.		3 hrs		
	3.Laser and uses of lasers		1 hr		
	4.Group theory- symmetry elements and symmetry operation- group postulates and types of groups- abelian and non abelian- symmetry operation of H ₂ O molecule.		3 hrs		
	5.Illustration of group postulates using symmetry operation of H ₂ O molecule- construction of multiplication table for the operation of H ₂ O molecules		2hrs		
	6. Point group- definition- elements symmetry operations of the following molecules-H ₂ O,BF ₃ and NH ₃ .		2hrs		
Unit II Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs	1.Second law of thermodynamic – need for the law – different statements of the law- Carnot cycle and efficiency of heat engine- Carnot's theorem- thermodynamic scale of temperature.	02.09.2021 to 24.09.2021	4 hrs		
	2.Concept of entropy- definition and physical significance of entropy- entropy as a function of P,V and T – entropy changes during phase changes – entropy of mixing- entropy criterion for spontaneous and equilibrium processes in isolated system.		4 hrs.		

Unit III Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs	3. Gibb's free energy (G) and Helmholtz free energy (A)- variation of A and G with P, V and T- Gibb's-Helmholtz equation and its applications. Thermodynamics equation of state,		3hrs		
	4. Maxwell's relations- A and G as criteria for spontaneity and equilibrium.		4 hrs		
	1. Equilibrium constant and free energy change- thermodynamic derivation of law of mass action- equilibrium constants in terms of pressure and concentration- NH_3 , PCl_5 and CaCO_3 . Thermodynamic interpretation of Lechatelier's principle (Concentration, temperature, pressure and addition of inert gases).	25.09.2021 to 21.10.2021	4 hrs		
	2. System variables composition- partial molar quantities- chemical potential- variation of chemical potential with T, P and X (mole fraction)- Gibb's Duhem equation.		4hrs		
	3. Van't Hoff's reaction isotherm- van't Hoff's isochore. Clapeyron equation and Clausius-Clapeyron equation- applications.		3 hrs		
Unit IV Content- 15 Hrs,	4. Third law of thermodynamics- Nernst heat theorem. Statement of III law and concept of residual entropy- evaluation of absolute entropy from heat capacity data.		4 hrs		
	1. Phase Rule – Phase, Component & Degree of Freedom. Gibbs Phase Rule. 2. Phase equilibria of one	22.10.2021 to 24.11.2021	2 hrs 3 hrs		

Assessment -3 Hrs Total - 18 Hrs	<p>component – Water, Carbondioxide and Sulphur.</p> <p>3.Phase equilibria of two component systems- Solid – Liquid equilibria – Bi – Cd system & Desilveration of Lead.</p> <p>4.Compound formation with congruent and incongruent melting point. Freezing mixtures.</p> <p>5.FeCl₃- Water system, Copper Sulphate – Water system. Efflorescence and Deliquescence.</p>		4 hrs		
			3 hrs		
			3 hrs		
Unit V Content -15 Hrs, Assessment -3 Hrs. Total-18 Hrs.	<p>1.Solutions- Solute, Solvent and solution – Ideal and non-ideal solution. Laws of solution- Raoult's law & Henry's law. Deviation of Raoult's and Henry's law.</p> <p>2.Gibbs Duhem Equation. Miscible liquids – benzene & toluene system.</p> <p>3.Fractional distillation. Azeotropes- HCl- water and ethanol-water system.</p> <p>4.Partially miscible liquids- phenol-water, triethylamine-water and nicotine- water systems. Lower and upper CSTs- effect of impurities on CST.</p> <p>5. Nernst distribution law, derivation.</p> <p>6. Colligative properties- relative lowering of vapour pressure & osmotic pressure.</p> <p>7. Colligative properties- derivation of elevation of boiling point and depression in freezing point.</p>	25.11.2021 to 22.12.2021	2hrs		
			3hrs		
			2hrs		
			2hrs		
			4hrs		
			2hrs.		
			2hrs		

D. ACTIVITIES

Activities Name	Details
Test	Monthly Test- Unit-I & IV (September) CIA / Mid Semester – Unit-I ,II& Unit-III(First ½ Portion) - 2 ½

	Unit(October) CIA / Model Examination -Unit-III (Second 1/2 Unit) , Unit IV& Unit-V- 2 ½ Units (December)
Assignment	Assignment I –Unit –I and Unit –II (September) Assignment II – Unit –III and Unit – IV (November)
Quiz	Two Mark Quiz Test - Unit I to Unit – V (November)
Seminar	Unit –V (November)
Tutorial Ward Meeting	Monthly once



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A. GENERAL INFORMATION

Name of the Faculty	: Dr.N.Prabha&Ms.A.Flora
Department	: Chemistry
Programme	: B.Sc
Programme Code	: BQJY
Name of the Paper	: Physical Chemistry Practical
Lecture Hours / Practical Hours	: 3Hrs / Week / Practical Hours

B. ABOUT THE COURSE

Course Objectives	Course Outcomes	Practical Methodology
<ul style="list-style-type: none">Students shall learn the fundamentals of various physical experiments.Students shall understand the method of determination of critical solution temperature, transition temperature and rate constant. Students acquire knowledge and skills of drawing graph and handling of some precision instruments.	<ul style="list-style-type: none">To understand the method of determination of critical solution temperature, transition temperature and rate constant.To learn the fundamentals of conductometric titration	<ul style="list-style-type: none">Students has to be in time for the laboratoryStudents are not allowed into the lab without prepared Observation Note.A student has to complete the practical and calculations at the stipulated time give to them.Students have to receive the signature in the observation note on the same day or on or before entering the next practical class.

C. PLAN OF THE WORK

Unit / Modules	Topic to be covered	Proposed date	Lecture Hours	Practical Hours	Remarks
	1. Critical Solution Temperature 2. Effect of impurity on Critical Solution Temperature 3. Transition Temperature	09.08.2021 to 09.09.2021			
	4. Rast Method 5. Phase Diagram (Simple eutectic system)	18.09.2021 to 25.09.2021			
	6. Kinetics of Ester Hydrolysis 7. Partition Co-efficient of iodine between water and carbon tetrachloride.	04.10.2021 to 22.10.2021			
	8. Conductometric Acid-Base Titration 9. Potentiometric Redox Titration 10. Determination of cell constant	01.11.2021 to 16.11.2021			

D. ACTIVITIES

Activities Name	Details
Repetition Class Observation Correction Record Correction Mid Semester Model Practical	17.11.2021 to 15.12.2021



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A. GENERAL INFORMATION

Name of the Faculty :Dr.J.Bhuvana
Department :Chemistry
Programme :B.Sc
Programme Code : BQE3
Name of the Paper :Analytical Chemistry
Lecture Hours / Practical Hours :5 Hrs / Week / Lecture Hours.

D. ABOUT THE COURSE

Course Objectives	Course Outcomes	Teaching Methodology
1. To know the storage and handling of various chemicals and first aid procedures. 2. To learn data analysis, various separation techniques. 3. To learn gravimetric analysis and various thermo analytical methods. 4. To learn Colorimetry fast reactions	1.Aware of Laboratory hygiene and safety. 2.Predict the data analysis in analytical techniques 3.Learn about separation and purification techniques. 4.Recognize the thermo analytical methods such as TGA,DTA and analytical electrochemistry. 5.Understand the colorimetric analysis and techniques in kinetics.	1. Chalk and Talk 2. Power point. 3. e- Module

E. PLAN OF THE WORK

Unit / Modules	Topic to be covered	Proposed date	Lecture Hours	Practical Hours	Remarks
Unit I Content- 12 Hrs, Assessment -3 Hrs Total - 15 Hrs	Laboratory Hygiene and safety: Storage and handling of corrosive, flammable, explosive chemicals	03.09.2021 to 20.09.2021	3 Hrs	-	-
	Storage and handling of toxic, carcinogenic and poisonous chemicals.		3 Hrs		
	Simple first aid procedure from accidents :Acid in eye, alkali in eye, acid burns, alkali burns bromine burns		3 Hrs		
	Poisoning, inhalation of gases, cut by glasses and heat burns.		3 Hrs		
Unit II Content- 12 Hrs, Assessment -3 Hrs	Data Analysis: Errors in chemical analysis	21.09.2021 to 01.10.2021	2 hrs		
	Classification of errors, determinate errors,		3 Hrs		

Total - 15 Hrs	<p>instrumental errors, personal errors, constant errors, and proportional errors</p> <p>Correction of determinate errors, random errors.</p> <p>Precision and accuracy</p> <p>Rejection of data questioned. Significant figures.</p> <p>Mean and standard deviation. Curve fitting.</p>		<p>2 Hrs</p> <p>2Hrs</p> <p>2 Hrs</p> <p>1 Hr</p>	-	-
<p>Unit III</p> <p>Content- 12 Hrs,</p> <p>Assessment -3 Hrs</p> <p>Total – 15 Hrs</p>	<p>Separation and purification techniques</p> <p>General principles involved in the separation of precipitates.</p> <p>Solvent extraction</p> <p>Chromatography: Principles involved in adsorption, partition and ion exchange, paper</p> <p>Thin layer, Column, Gas chromatography</p> <p>Electrophoresis applications.</p>	05.10.2021 to 27.10.2021	<p>2Hrs</p> <p>2 Hrs</p> <p>1 Hr</p> <p>3 Hrs</p> <p>3 Hrs</p> <p>1 Hr</p>	-	-
<p>Unit IV</p> <p>Content- 12 Hrs,</p> <p>Assessment -3 Hrs</p> <p>Total - 15 Hrs</p>	<p>Thermo analytical Methods - Principals involved in TGA and DTA – instrumentation. Characteristics of TGA (CaC₂O₄.H₂O, CuSO₄.5H₂O) and DTA curve (CaC₂O₄.H₂O).</p> <p>Factors affecting TGA and DTA curves.</p> <p>Thermometric titration of HCl Vs NaOH</p> <p>Analytical Electrochemistry - Redox potential – measurement and applications. Interpretation of chemical behaviour.</p> <p>Electrolytic separations. Principles of Electrodeposition.</p>	29.10.2021 to 23.11.2021	<p>3 Hrs</p> <p>1 Hr</p> <p>1 Hr</p> <p>2 Hrs</p> <p>3 Hrs</p> <p>2 Hrs</p>	-	-

	Electro gravimetric (estimation of Cu and Ag) .				
Unit V Content- 12 Hrs, Assessment -3 Hrs Total - 15 Hrs	Colorimetric analysis : Laws of colorimetry – instrumentation. Nessler’s and photoelectric colorimetric method- operation and application. Estimation of Ni, Cu and Fe. Techniques in kinetics Principles and techniques used to follow the kinetics of ordinary reactions Principles and techniques used to follow the kinetics of fast reactions Principles and techniques used to follow the kinetics of photochemical reactions	24.11.2021 to 14.12.2021	2 Hrs 2 Hrs 2 Hrs 2 Hrs 2 Hrs	-	-

D. ACTIVITIES

Activities Name	Details
Test	Monthly Test- Unit-I (September) Monthly Test – Unit – II (October) CIA / Mid Semester – Unit-I ,II& III (first ½ portion)- 2 ½ Unit(November) CIA / Model Examination -Unit-III(Second 1/2 Unit) , Unit IV & Unit-V- 2 ½ Units (December)
Assignment	Assignment I –Unit –I and Unit –II (September) Assignment II– Unit –III and Unit – IV (October)
Quiz	Two Mark Quiz Test - Unit I – Unit – V (November)
Seminar	Unit –V (November)
Tutorial Ward Meeting	Monthly once

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A. GENERAL INFORMATION

Name of the Faculty : Ms.M.Tamilpriya
Department : Chemistry
Programme : B.Sc
Programme Code : QUS2
Name of the Paper : Applied Chemistry
Lecture Hours / Practical Hours : 2 Hrs / Week/ Lecture Hours

B. ABOUT THE COURSE

Course Objectives	Course Outcomes	Teaching Methodology
<input type="checkbox"/> Students learn about types and hardness techniques of water. <input type="checkbox"/> Students learn how to determine TDS,COD and BOD. <input type="checkbox"/> Students understand about the application of Leather Chemistry. <input type="checkbox"/> Students shall know about the physiochemical properties of milk. <input type="checkbox"/> Students understand about the constituent of diary products.	CO:1 Develop an understanding about type of water. CO:2 Experience in water analysis such as TDS, Total hardness, BOD and COD CO:3 Expertise in Leather manufacture and processing. CO:4 Learn about constituent physical and chemical properties of milk. CO: 5 Skills in preparation of dairy products such as butter, ghee, ice-cream.	1. Chalk and Talk 2. Power Point 3. e - Module

C. PLAN OF THE WORK

Unit/ Modules	Topic to be covered	Proposed date	Lecture Hours	Practical Hours	Remarks
Unit - I Content – 4 Hrs Assessment- 2 Hrs Total- 6 Hrs	1.Types of water, soft and hard water 2.Hardness- degree of hardness 3. Reverse osmosis 4.Ion exchange methods	11.08.2021 to 19.08.2021	1 hrs 1 hrs 1 hrs 1 hrs		
Unit - II Content – 4 Hrs Assessment- 2 Hrs Total- 6 Hrs	1.Determination of TDS 2. Total hardness by EDTA 3. Total hardness by BOD 4. Total hardness by COD	27.08.2021 to 06.09.2021	1 hrs 1 hrs 1 hrs 1 hrs		
Unit – III Content – 4 Hrs Assessment- 2 Hrs Total- 6 Hrs	1.Chief process used in leather manufacture 2. structure of hide and skin 3. Leather processing 4. Tanning process	14.09.2021 to 22.09.2021	1 hrs 1 hrs 1 hrs 1 hrs		
Unit – IV Content – 4 Hrs Assessment- 2 Hrs Total- 6 Hrs	1.Definition of milk, physiochemical properties of milk 2. constituents of milk 3. chemical change taking place in milk 4.Boiling,pasteurization,sterilization and homogenization	28.09.2021 to 07.10.2021	1 hrs 1 hrs 1 hrs 1 hrs		

Unit – V Content – 4 Hrs Assessment- 2 Hrs Total- 6 Hrs	1. Definition of creams, butter, ghee and ice creams 2. Definitions of Milk powder 3. Need for making powder 4. Principles involved in drying process	13.10.2021 to 02.11.2021	1 hrs 1 hrs 1 hrs 1 hrs		
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D. ACTIVITIES

Activities Name	Details
Test	Monthly Test – Unit – I (November) CIA/Mid semester – Unit – I, II (first 1/2 portion) & III – 2 1/2 Unit(November) CIA/Modal Examination – Unit – II(second 1/2 Unit) Unit – IV& Unit – V -2 1/2 Units (December)
Assignment	Assignment I – Unit – I (November) Assignment II – Unit – II and Unit -IV(December)
Quiz	Two mark Quiz Test – Unit- I – Unit – V (December)
Seminar Tutorial ward meeting	Monthly Onces

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A. GENERAL INFORMATION

Name of the Faculty : A.FLORA
Department : Chemistry
Programme : B.Sc
Programme Code : UQS2
Name of the Paper : Polymer Chemistry
Lecture Hours / Practical Hours : 5 Hrs / Week/ Lecture Hours

B.ABOUT THE COURSE

Course Objectives	Course Outcomes	Teaching Methodology
To Learn about introduction to polymers and macromolecules To Learn about molecular structure and molecular weight of polymer To Learn about Kinetics of polymerisation To Understand the natural and synthetic polymers To Understand the plastic and resin	Students Learn about CO 1: To help students explore about polymers and macromolecules. CO 2: To assess the molecular weight of polymers, structure and its stereochemistry. CO 3: To recognize the kinetics of polymerization. CO 4: To distinguish the natural and synthetic polymer. CO 5: How to make plastics and resins.	1. Chalk and Talk 2. Power Point 3. e - Module

C.PLAN OF THE WORK

Unit/ Modules	Topic to be covered	Proposed date	Lecture Hours	Practical Hours	Remarks
Unit I Content- 04 Hrs, Assessment -02 Hrs Total - 6 Hrs	1.INTRODUCTION Introduction to polymers and Macromolecules. 2.Molecular forces and Chemical bonding in polymers. 3. General methods of preparation of polymer	11.08.2021 to 19.08.2021	2hrs 2 hrs		
Unit II Content- 04 Hrs, Assessment -02 Hrs Total - 6 Hrs	MOLECULAR WEIGHT OF POLYMERS 1.Polymer structure-Linear, branched and cross linked polymers	27.08.2021 to 06.09.2021	2 hrs		

	<p>2.Stereochemistry of polymers–Isotactic, syndiotactic and Atactic.Properties of Polymers.</p> <p>3.Molecular weight of Polymers-Number average molecular weight and weight average molecular weight.</p> <p>4. Viscosity and molecular weight. Osmometry.</p>		2 hrs		
<p>Unit III Content- 04 Hrs, Assessment -02 Hrs Total - 6 Hrs</p>	<p>KINETICS</p> <p>1.Co polymerization - Definitions –homo and copolymers,Block copolymers and graft copolymers.</p> <p>2.Kinetics of polymerization-</p> <p>3.Kinetics of free radical polymerization kinetics of cationic polymerization.</p> <p>4.Mean kinetic chain length. Degree of polymerization. Inhibition and retardation. Chain transfer.</p>	<p>14.09.2021 to 22.09.2021</p>	<p>2 hrs</p> <p>2 hrs</p>		
<p>Unit IV Content- 04 Hrs, Assessment -02 Hrs Total - 6 Hrs</p>	<p>NATURAL & SYNTHETIC POLYMER</p> <p>1.Natural and synthetic rubbers, constitution of natural rubber.</p> <p>2.Thiocol, Polyurethane and silicone rubbers. Thermocole polymers related to natural rubber</p> <p>3.Chlorinate rubber, oxidized rubber, cyclised rubber and ebonite.</p> <p>4. Acrylic polymers - Polymers of acrylic acid, methacrylic acid and polyacrylates.</p>	<p>28.09.2021 to 07.10.2021</p>	<p>2 hrs</p> <p>2 hrs</p>		
<p>Unit V Content- 04 Hrs, Assessment -02 Hrs Total - 6 Hrs</p>	<p>PLASTICS & RESINS</p> <p>1.Plastics and Resins- Definitions, Thermoplastic and thermosetting resins. Constituents of plastics fillers, dyes, pigments, plasticizers, lubricants and catalysts.</p>	<p>13.10.2021 to 02.11.2021</p>	<p>2 hrs</p> <p>2 hrs</p>		

	<p>2.Important thermoplastic resins acrylics, polyvinyl and cellulose derivatives.</p> <p>3.Important thermosetting resins – Phenolic resins, amino resins, epoxy resins, alkyd resins and silicone resins.</p>				
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D.ACTIVITIES

Activities Name	Details
Test	<p>Monthly Test – Unit – I (November) CIA/Mid semester – Unit – I, II (first 1/2 portion) & III – 2 1/2 Unit(November) CIA/Modal Examination – Unit – II(second 1/2 Unit) Unit – IV& Unit – V -2 1/2 Units (December)</p>
Assignment	<p>Assignment I – Unit – I (November) Assignment II – Unit – II and Unit -IV(December)</p>
Quiz	<p>Two mark Quiz Test – Unit- I – Unit – V (December) Monthly Once</p>
Seminar Tutorial ward meeting	



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A. GENERAL INFORMATION

Name of the Faculty : Ms.N.P.RUDRA SHOWDRI
 Department : Chemistry
 Programme : B.Sc
 Programme Code : SSD
 Name of the Paper :Soft Skill Development
 Lecture Hours / Practical Hours : 2Hrs / Week / Lecture Hours

B. ABOUT THE COURSE

Course Objectives	Course Outcomes	Teaching Methodology
To programme is a programme for overall development of the students, creating skills necessary for enhancing employability as well as entrepreneurial abilities of students.	On completion of the Course, Students should be able to By the end of the soft skills training program, the students should be able to: Develop effective communication skills (spoken and written). Develop effective presentation skills. Conduct effective business correspondence and prepare business reports which produce results.	1. Chalk and Talk 2. Power point. 3. e- Module

C. PLAN OF THE WORK

Unit / Modules	Topic to be covered	Proposed date	Lecture Hours	Practical Hours	Remarks
Unit I Content- 4Hrs, Assessment -2 Hrs Total - 6 Hrs	HARD SKILLS AND SOFT SKILLS 1. Introduction of soft skill development and Aspects of Soft skills 2. Importance of soft skills. Importance and Process of knowing ourself 3. SWOT analysis. Developing Positive Attitude 4. Values and Perception	03.08.2020 to 30.09.2020	1 hr 1hr 1hr 1hr	-	-

Unit II Content- 4Hrs, Assessment -2 Hrs Total - 6 Hrs	INTERPERSONAL RELATION SHIPS 1. Importance of interpersonal skills Team working and Group dynamics. 2. Networking – Business networking Computer networking 3. Wireless networking and Other types of networking		1 hr 2hrs 1hrs	-	-
Unit III Content- 4Hrs, Assessment -2 Hrs Total - 6 Hrs	1. Goal setting,Carrier Planning 2. Time management 3. Reading skills and Writing skills	17.09.2020 to 08.10.2020	1hr 1hr 2hrs		
Unit IV Content- 4Hrs, Assessment -2 Hrs Total - 6 Hrs	CORPORATE SKILLS 1. Body language 2. Etiquette 3. Good manners 4. Time management and Stress management	09.10.2020 to 02.11.2020	1hr 1hr 1hr 1hr		
Unit V Content- 4Hrs, Assessment -2 Hrs Total - 6 Hrs	Selling Self- Job Hunting 1. Stages of selling self 2. Types of Resumes 3. Cover letter 4. Interview Skills and Group Discussion	01.10.2020 to 26.11.2020	1hr 1hr 1hr 1hr	-	-

D. ACTIVITIES

Activities Name	Details
Test	Monthly Test- Unit-I (october) CIA / Mid Semester – Unit-I ,II(1/2 Unit) & IV (November) CIA / Model Examination -Unit-II(second 1/2 Unit), Unit III & Unit-V- 2 ½ Units (December) Assignment I –Unit –I (November) Assignment II– Unit –I and Unit – II (December)
Assignment	Two Mark Quiz Test - Unit III – Unit – IV (December)
Quiz	Monthly once
Seminar	
Tutorial Ward Meeting	



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A. GENERAL INFORMATION

Name of the Faculty : Mrs. A. Rakini
Department : Chemistry
Programme : M.Sc
Programme Code : PGQB
Name of the Paper : Organic Chemistry-I
Lecture Hours / Practical Hours : 6 Hrs / Week/ Lecture Hours

B. ABOUT THE COURSE

Course Objectives	Course Outcomes	Teaching Methodology
<ul style="list-style-type: none">Understand the basic concepts of aromaticity.Learn the oxidation and reducing reagents for organic synthesis.Gain in depth knowledge in stereo chemistry of organic compounds.Illustrate the effect of light in organic reactions.Study the concerted pericyclic reactions.	<p>On completion of the course the learner will be able</p> <p>CO 1: Gain the knowledge in the field of stereochemistry.</p> <p>CO 2: To introduce synthetic methodology of preparation of compounds.</p> <p>CO 3: Discuss the various methods of determination of Reaction mechanism.</p> <p>CO 4: Explain the criteria for Chirality and discuss axial, Planar and helical chirality</p> <p>CO 5: Discuss the photochemistry of π-π^* transitions</p>	<ol style="list-style-type: none">Chalk and TalkPower point.e- Module

C. PLAN OF THE WORK

Unit / Modules	Topic to be covered	Proposed date	Lecture Hours	Practical Hours	Remarks
Unit I Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs	AROMATICITY <ol style="list-style-type: none">Aromatic character: Five, six, seven-, and eight membered rings – other systems with aromatics extetsHuckel's theory of aromaticity, concept of homo aromaticity and antiaromaticity.Electron occupancy in MO's and aromaticity – NMR concept of aromaticity and antiaromaticity,systems with 2,4,8 and 10 electrons, systems of more than 10electrons (annulenes),Mobius aromaticity. Bonding properties of systems with $(4n+2)$ π-electrons and$4n\pi$- electrons, alternant and non- alternant hydrocarbons (azulene type)–aromaticity in hetero aromatic molecules, sydnones and fullerenes.	21.09.2021 to 30.09.2021	2 hr 3hrs 2hrs 2hr 2hr 2hrs 2hrs	-	-

<p>Unit II Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs</p>	<p>AGENTS IN ORGANIC SYNTHESIS</p> <ol style="list-style-type: none"> Oxidation :Baeyer-Villiger, Jacobsen epoxidation, Shiepodation, Jones reagent, PCC, PDC ,IBX, DMP ,CAN, TPAP, NOCl, Mn (OAc)₃, Cu(OAC)₂ ,Bi₂O₃, Swern oxidation, Sommelet reaction, Elbsreaction, Oxidative coupling of phenols, Prevost reaction and Woodward modification. Reduction palladium /platinum /rhodium /nickel based heterogeneous catalysts for hydrogenation, Wilkinson's catalyst, Noyori asymmetric hydrogenation–reductions using Li/Na /Cainliquid ammonia. Hydride transfer reagents from group III and groupIVinreductions. (i)triacetoxyborohydride, L-selectride, K-selectride, Luche reduction, Red-Al,NaBH₄ and NaCNBH₃ ,trialkyl silane sandtri alkyl stannane (ii)stereo/enantios electivity reductions (Chiral Boranes, Corey- akshi-S hibata). 	<p>04.10.2021 To 22.10.2021</p>	<p>2 hr 3hrs 2hrs 1hrs 1hr 2hr 2hrs 2hrs</p>	<p>-</p>	<p>-</p>
<p>Unit III Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs</p>	<p>STEREOCHEMISTRY AND CONFORMATIONAL ANALYSIS</p> <ol style="list-style-type: none"> Stereoisomerism– symmetry– enantiomers and diastereomers –<i>R</i> and <i>S</i> nomenclature optical activity and chirality– types of molecules exhibiting optical activity– absolute configuration– chirality in molecules with non-Carbon stereocenters (N,SandP) – molecules with more than one chiral centre– atropisomerism.Molecular chirality – allenes, spiranes ,biphenyls, helicenes and cyclophanes–methods of determining configuration – <i>E</i> and <i>Z</i> nomenclature– 	<p>25.10.2021 To 16.11.2021</p>	<p>3hrs 3hrs 2hrs</p>		

	<p>determination of configuration of</p> <p>4. geometrical isomers – stereochemistry of addition and elimination reactions – stereospecific and stereoselective synthesis [elementary examples].</p> <p>5. Basic concepts of conformations of cyclopentane, cyclohexane,</p> <p>6. cyclohexene and fused (decalin) and bridged (norbornane type) ring systems – anomeric effect in cyclic compounds.</p>		2hrs		
			2hrs		
			3hrs		
<p>Unit IV Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs</p>	<p>ORGANIC PHOTO CHEMISTRY</p> <p>1. Organic photochemistry – fundamental concepts – energy transfer characteristics of</p> <p>2. photoreactions – photoreduction and photooxidation, photosensitization.</p> <p>3. Photoreactions of ketones and enones – Norrish Type I and II reactions – Paterno-Büchi reaction – photo-</p> <p>4. Fries rearrangement – photochemistry of alkenes, dienes and aromatic compounds – di-π-methane rearrangement.</p> <p>5. Reactions of unactivated centres – photochemistry of α, β-unsaturated carbonyl compounds – photolytic cyclo additions and</p> <p>6. Photolytic rearrangements – photoadditions – Barton reaction.</p>	<p>17.11.2021 To 09.12.2021</p>	3hrs		
			3hrs		
			2hrs		
			2hrs		
			2hrs		
			3hrs		
<p>Unit V Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs</p>	<p>PERICYCLIC REACTIONS</p> <p>1. Concerted reactions – orbital symmetry and concerted symmetry –</p> <p>2. Woodward and Hoffmann rules – selection rules for electrocyclic reactions – frontier molecular orbital approach – correlation diagram – examples.</p> <p>3. Selection rules for cyclo addition reactions – frontier molecular orbital approach –</p>	<p>13.12.2021 to 28.12.2010</p>	3hrs		
			2hrs		
			3hrs		

	<p>correlation diagram– examples–chelotropic and ene reactions.</p> <p>4. Sigmatropic rearrangements– 1,3, 1,5 and 1,7-hydrogen shifts – examples –Cope and</p> <p>5. Claisen rearrangements – 1,3-dipolar cycloaddition reactions:</p> <p>6. types of dipoles, selectivity, scope and applications.</p>				
			2hrs		
			3hrs		
			2hrs		

D. ACTIVITIES

Activities Name	Details
Test	<p>Monthly Test- Unit-I (November)</p> <p>CIA / Mid Semester – Unit-I ,II (first ½ portion)& III - 2 ½ Unit(November)</p> <p>CIA / Model Examination -Unit-II(Second 1/2 Unit) , Unit IV & Unit-V- 2 ½ Units (December)</p> <p>Assignment I –Unit –I (November)</p> <p>Assignment II– Unit –II and Unit – IV (December)</p>
Assignment	Two Mark Quiz Test - Unit I – Unit – V (December)
Quiz	Monthly once
Seminar	
Tutorial Ward Meeting	

PRINCIPAL

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A. GENERAL INFORMATION

Name of the Faculty : Ms.M.Tamilpriya
 Department : Chemistry
 Programme : M.Sc
 Programme Code : PGQB
 Name of the Paper : Inorganic Chemistry - I
 Lecture Hours / Practical Hours : 4 Hrs / Week/ Lecture Hours

B. ABOUT THE COURSE

Course Objectives	Course Outcomes	Teaching Methodology
<ul style="list-style-type: none"> Understand the basic concepts of main group elements. Detection of complex formation and factors affecting stability. Learn the theories and mechanism of reactions of metal complexes. Describe bonding in coordination compounds. Study the concepts of photochemistry and its applications. 	<p>CO 1: Gain idea about the recent advances in Inorganic chemistry</p> <p>CO 2: Identify the synthesis, structure and bonding of carbon-pi-donor complexes</p> <p>CO 3: Calculate magnetic moment & crystal field Stabilization energy of metal complexes.</p> <p>CO 4: Explain about different type of electron transfer Reaction (one electron transfer reaction & direct electron transfer reaction) and factors affecting them.</p> <p>CO 5: Acquire knowledge about the basic principles of photo inorganic chemistry</p>	<p>1. Chalk and Talk</p> <p>2. Power Point</p> <p>3. e - Module</p>

C. PLAN OF THE WORK

Unit/ Modules	Topic to be covered	Proposed date	Lecture Hours	Practical Hours	Remarks
Unit – I Content – 15 Hrs Assessment- 3 Hrs Total- 18 Hrs	<p>MAIN GROUP CHEMISTRY</p> <p>1.Chemistry of boron,borane, higher boranes, carboranes, borazines and boron nitrides chemistry of silicon,silanes, higher silanes, multiple bonded systems, disilanes, silicon nitrides.</p> <p>2.P-Ncompounds, cyclophosphazanes and cyclophosphazenes S-Ncompounds S₂N₂,S₄N₄,(SN)_x,polythiazyl S_xN₄ compounds S-N cations and anions, S-P compounds</p> <p>3.molecularsulphides such</p>	21.09.2021 to 07.10.2021	3hrs 3hrs 3hrs 3hrs 3hrs		

	<p>as P4S3, P4S7, P4S9 and P4S10 homo cyclic inorganic systems oxocarbonanion.</p> <p>4. Ionic model lattice energy Born-Landé equation Kapustinskii equation high T_c superconductors solid state reactions tarnish reaction decomposition, 5. solid-solid reaction and photographic process— factors affecting reaction rate.</p>				
<p>Unit – II Content – 15 Hrs Assessment- 3 Hrs Total- 18 Hrs</p>	<p>PRINCIPLES OF COORDINATION CHEMISTRY</p> <p>1. Studies of coordination compounds in solution 2. detection of complex formation in solution stability constants stepwise and overall formation constants. 3. Simple methods (potentiometric, pH metric and photometric methods) of determining the formation constants. 4. Factors affecting stability statistical 5. chelate effects forced configurations.</p>	<p>08.10.2021 to 29.10.2021</p>	<p>3hrs 3hrs 3hrs 3hrs 3hrs</p>		
<p>Unit – III Content – 15 Hrs Assessment- 3 Hrs Total- 18 Hrs</p>	<p>THEORIES OF METAL-LIGAND BOND</p> <p>1. Crystal field theory splitting of d-orbitals under various geometries factors affecting splitting. 2. CFSE and evidences for CFSE (structural and thermodynamic effects). 3. Spectrochemical series „Jahn-Teller distortion 4. spectral and magnetic properties of complexes— site preferences. Limitations of CFT ligand field theory 5. MO theory sigma and pi-bonding in complexes Nephelauxetic effect the angular overlap model.</p>	<p>02.11.2021 to 02.12.2021</p>	<p>3hrs 3hrs 3hrs 3hrs 3hrs</p>		

<p>Unit – IV Content – 15 Hrs Assessment- 3 Hrs Total- 18 Hrs</p>	<p>REACTION MECHANISM IN COORDINATION COMPLEXES 1.Kinetics and mechanism of reactions in solution labile and inert complexes ligand displacement reactions in octahedral and square planar complexes acid hydrolysis, base hydrolysis and anation reactions. 2.Trans effect theory and applications electron transfer reactions electron exchange reactions complementary and non-complementary types inner sphere and outer sphere processes 3.application of electron transfer reactions in inorganic complexes isomerisation and racemisation reactions of complexes. 4.Molecular rearrangements of four- and six coordinate complexes interconversion of stereoisomers reactions of coordinated ligands 5.template effect and its applications for the synthesis of macro cyclic ligands unique properties.</p>	<p>03.12.2021 to 22.12.2021</p>	<p>3hrs 3hrs 3hrs 3hrs</p>		
<p>Unit – V Content – 15 Hrs Assessment- 3 Hrs Total- 18 Hrs</p>	<p>INORGANIC PHOTOCHEMISTRY 1.Electronic transitions in metal complexes, metal centered and charge-transfer transitions various photo physical and photo chemical processes of coordination compounds. 2.Uni molecular charge-transfer photo chemistry of cobalt(III) complexes mechanism of CTTM 3. photo reduction ligand field photochemistry of chromium(III) complexes 4.Adamson’s rules, photo active excited states, V-Cmodel– photo physics and photo chemistry of</p>	<p>27.12.2021 to 11.01.2022</p>	<p>3hrs 3hrs 3hrs 3hrs</p>		

	<p>ruthenium poly pyridine complexes, emission and redox properties.</p> <p>5.Photochemistry of organo metallic compounds metal carbonyl compounds compounds with metal-metal bonding Reinecke's salt chemical action meter.</p>				
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C. ACTIVITIES

Activities Name	Details
Test	<p>Monthly Test – Unit – I (November)</p> <p>CIA/Mid semester – Unit – I, II (first 1/2 portion) & III – 2 1/2 Unit(November)</p> <p>CIA/Modal Examination – Unit – II(second 1/2 Unit) Unit – IV& Unit – V -2 1/2 Units (December)</p>
Assignment	<p>Assignment I – Unit – I (November)</p> <p>Assignment II – Unit – II and Unit -IV(December)</p>
Quiz	<p>Two mark Quiz Test – Unit- I – Unit – V (December)</p>
Seminar Tutorial ward meeting	<p>Monthly Once</p>



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A. GENERAL INFORMATION

Name of the Faculty : R.MAHESWARI
Department : Chemistry
Programme : I-M.Sc., Chemistry
Programme Code : PGQC
Name of the Paper : PHYSICAL CHEMISTRY I
Lecture Hours / Practical Hours : 6 Hrs / Week/Lecture Hours

B. ABOUT THE COURSE

Course Objectives	Course Outcomes	Teaching Methodology
<ul style="list-style-type: none">Understand the concepts of group theory and quantum chemistry.Learn the chemical kinetics and statistical thermodynamics.Study the theories of kinetics, photo chemistry and radiation chemistry.Describe the importance of statistical mechanics. Acquire knowledge about quantum statistics.	<p>Course Outcomes:</p> <p>On completion of the course the learner will be able</p> <p>Identify the point groups of molecules and apply the concept of group theory to predict the spectroscopic properties.</p> <p>Explain the concept of black body radiation, operators, commutation of Operators, eigen function, eigen value and well behaved function.</p> <p>Learn the concept of entropy, 3rd law of thermodynamics & evaluation of absolute entropy from heat capacity data</p> <p>Give the concept of distribution and probability and derive Boltzmann distribution law.</p> <p>Describe types of photo chemical reactions and Photo Sensitization reaction.</p>	<ol style="list-style-type: none">Chalk and TalkPower point.e- Module

C. PLAN OF THE WORK

Unit / Modules	Topic to be covered	Proposed date	Lecture Hours	Practical Hours	Remarks
Unit I Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs	CONCEPTS OF GROUP THEORY Symmetry elements and operations – point groups – assignment of point groups to molecules. Group postulates and types of groups – group multiplication tables, sub groups, similarity transformations – conjugate elements and classes. Matrix representation of symmetry operations and point groups – reducible and irreducible representations.	11.08.2021 to 26.08.2021	3 hrs 2hr 3hrs 3hrs	-	-

	properties of irreducible representation. The great orthogonality theorem–construction of character table – direct product–projection operators–symmetry of hybrid orbitals.		3hrs		
			3hrs		
Unit II Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs	QUANTUM CHEMISTRY-I Inadequacy of classical mechanics–black body radiation. Planck’s quantum concept–photo electric effect–Bohr’s theory of hydrogen atom–hydrogen spectra. wave-particle dualism – uncertainty principle – decline of old quantum theory. Schrödinger equation–postulates of quantum mechanics –operator algebra linear operator. Hermitian operators, eigen functions and eigen values, angular momentum operator–commutation relations and related theorems–. Orthogonality and normalization. Applications of wave mechanics to simple systems . Particle in a box, one and three dimensional, particle with finite potential barrier–the quantum mechanical tunneling	27.08.2021 to 17.09.2021	3hrs 2hrs 3hrs 3hrs 3hrs 1 hrs 3hrs		
Unit- III Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs	CHEMICAL KINETICS-I Theories of reaction rate – absolute reaction rate theory (ARRT) – transmission coefficient, Reaction coordinate–potential energy surfaces . kinetic isotope effect–Hinshelwood theory–Kassel, Rice and Ramsperger theory (KRRT)–Slater’s treatment. Principle of microscopic reversibility–steady-state approximation–chain reactions:	24.09.2021 to	4hrs 3hrs 3hrs 1hrs 3hrs		

<p>Unit- IV Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs</p>	<p>Thermal and photochemical reactions between hydrogen and halogens—explosions and hydrogen-oxygen reactions.</p> <p>STATISTICAL THERMODYNAMICS Thermodynamic probability –probability theorems– relation between entropy and probability (Boltzmann Planck equation), Ensembles, phase space, Ergodic hypothesis, microstates and macro states, Maxwell-Boltzmann distribution law partition functions– translational, rotational, vibrational and electronic partition functions. Relationship between partition functions and thermodynamic properties. calculation of equilibrium constants from partition functions . Heat capacities of monatomic crystals–Einstein theory and Debyetheory. Quantum statistics – Bose-Einstein (B.E.) and Fermi-Dirac (F.D.) distribution equations – comparison of B.E. and F.D. statistics with Boltzmann statistics. Applications of quantum statistics to liquid helium , electrons in metals and Planck’s radiation law– concept of negative Kelvin temperature.</p>	<p>21.10.2021 to 15.11.2021</p>	<p>3hrs 2hrs 3hrs 3hrs 1hr 3hrs 2hrs 1hr 3hrs</p>		
<p>Unit -V Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs</p>	<p>FAST REACTION TECHNIQUES, PHOTO CHEMISTRY AND RADIATION CHEMISTRY Introduction–flow methods (continuous and stopped flow methods) Relaxation methods (T and P jump methods) – pulse techniques (pulse radiolysis, flash photolysis)–shocktube</p>	<p>17.11.2021 to 14.12.2021</p>	<p>3hrs</p>		

method–molecular beam method				
Life time method. Photo physical processes of electronically excited molecules –Jablonski diagram		2hrs		
Stern-Volmer equation and its applications– experimental techniques in photochemistry–chemical actinometers –lasers and their applications.		3hrs		
Differences between radiation chemistry and photo chemistry.		4hrs		
Sources of high energy radiation and interaction with matter–radiolysis of water, solvated electrons – definition of G value, Curie.		3hrs		
Linear energy transfer (LET) and Rad–scavenging techniques– use of dosimetry and dosimeters in radiation chemistry– applications of radiation chemistry.		3hrs		

D. ACTIVITIES

Activities Name	Details
Test	Monthly Test- Unit-I (August) Monthly Test – Unit – II (September) CIA / Mid Semester – Unit-I ,II& III (first ½ portion)- 2 ½ Unit(October) CIA / Model Examination -Unit-III(Second 1/2 Unit) , Unit IV & Unit-V- 2 ½ Units (November)
Assignment	Assignment I –Unit –I and Unit –II (September) Assignment II– Unit –III and Unit – IV (October)
Quiz	Two Mark Quiz Test - Unit I – Unit – V (October)
Seminar	Unit –V (October) Monthly once

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A. GENERAL INFORMATION

Name of the Faculty : Dr.J.BHUVANA & N.P.RUDRA SHOWDRI
Department : Chemistry
Programme : M.Sc
Programme Code : PGQDY
Name of the Paper : ORGANIC CHEMISTRY PRACTICAL – I
Lecture Hours / Practical Hours : 6 Hrs / Week / Practical Hours

B. ABOUT THE COURSE

Course Objectives	Course Outcomes	Practical Methodology
To perform the qualitative analysis of a given organic mixture. To carry out the preparation of organic compounds.	Gain knowledge on the skills of doing separation, preparation of chemical compounds. Learn about the methods of qualitative analysis of organic compounds	<ul style="list-style-type: none">• Students has to be in time for the laboratory• Students are not allowed into the lab without prepared Observation Note.• A student has to complete the practical and calculations at the stipulated time give to them.• Students have to receive the signature in the observation note on the same day or on or before entering the next practical class.

C. PLAN OF THE WORK

Unit / Modules	Topic to be covered	Proposed date	Lecture Hours	Practical Hours	Remarks
	Preparation of Benzo phenone oxime from benzophenone (addition)	25.09.21		6 Hrs	
	Preparation of Glucose penta acetate from glucose (acetylation) Preparation of Resacetophenone from resorcinol (acetylation)	04.10.21		6 Hrs	
	Preparation of p-Benzoquinone from hydroquinone (oxidation) Preparation of Phenylazo-2-naphthol from aniline (diazotization)	11.10.21		6 Hrs	
	Qualitative Analysis - I	22.10.21		6 Hrs	
	Qualitative Analysis - I	01.11.21		6 Hrs	
	Qualitative Analysis – II	16.11.21		6 Hrs	
	Qualitative Analysis - III	25.11.21		6 Hrs	
	Qualitative Analysis - IV	07.12.21		6 Hrs	
	Qualitative Analysis - V	15.12.21		6 Hrs	

D. ACTIVITIES

Activities Name	Details
Repetition Class Observation Correction Record Correction Mid Semester Model Practical	16.12.2021 to 27.12.2021



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A. GENERAL INFORMATION

Name of the Faculty : R.MAHESWARI & M.TAMILPRIYA

Department : Chemistry

Programme : M.Sc.,

Programme Code : PGQEY

Name of the Paper : Inorganic chemistry practical-I

Lecture Hours /Practical Hours : 6 Hrs / Week / Lecture Hours.

• ABOUT THE COURSE

Course Objectives	Course Outcomes	Teaching Methodology
<ul style="list-style-type: none">To perform the qualitative analysis of a given Inorganic mixture.To carry out the preparation of Inorganic complexes.	<p>On completion of the course students should be able to</p> <p>Doing the estimation of chemicals which provide knowledge about the purity and concentration.</p> <p>Expertise inorganic synthetic methods</p>	<p>Students has to be in time for the laboratory</p> <p>1. Students are not allowed into the lab without prepared</p> <p>Observation Note.</p> <p>1. A student has to complete the practical and calculations at the stipulated time give to them.</p> <p>2. Students have to receive the signature in the observation note on the same day or on or before entering the next practical class.</p>

C. PLAN OF THE WORK

Unit / Modules	Topic to be covered	Proposed date	Lecture Hours	Practical Hours	Remarks
	Qualitative Analysis of Common and less common cations by Semi-microtechnique	27.9.2021 to 24.12.2021		2 Hrs	
	Estimation by Complexometry : <ul style="list-style-type: none"> • Estimation of Zinc • Estimation of Magnesium • Estimation of Calcium <ul style="list-style-type: none"> • Estimation of Nickel. • Preparation of the following Inorganic complexes. <ul style="list-style-type: none"> • Lead tetra acetate • Trithiourea Copper(II) Sulphate • Tetrammine Copper(II) Sulphate • Prussion Blue • Hexathiourea Plumbous Nitrate (II) 			2Hrs 2hrs	
				2Hrs 2Hrs 2Hrs	-

D. ACTIVITIES

Activities Name	Details
Repetition Class Observation Correction Record Correction Mid Semester Model Practical	27.9.2021 to 24.12.2021

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TEACHERS PLAN

A. GENERAL INFORMATION

Name of the Faculty : Dr. N. Prabha & Ms. A. Flora
 Department : Chemistry
 Programme : M.Sc
 Programme Code : MQJ
 Name of the Paper : Physical Methods in Chemistry.
 Lecture Hours / Practical Hours : 6 Hrs / Week / Lecture Hours

B. ABOUT THE COURSE

Course Objectives	Course Outcomes	Teaching Methodology
	1. To acquire qualitative and quantitative knowledge of the fundamental concepts of various Spectroscopic methods. 2. To know the basic principles and applications of UV/Vis - spectroscopy. 3. To distinguish between various spectroscopic transitions and interpret data for molecular Characterization. 4. To learn the basic principles of FT-IR, NMR spectroscopy. 5. To provide an advanced level in- depth understanding about EPR spectroscopy.	1. Chalk and Talk 2. Power point. 3. e- Module

C. PLAN OF THE WORK


Unit / Modules	Topic to be covered	Proposed date	Lecture Hours	Practical Hours	Remarks
Unit I Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs	1. Basic principles of electronic transitions — instrumentation and sample handling techniques. Application of UV – Visible spectroscopy .	09.08.2021 to 01.09.2021	4 hrs		
	2. Woodward – Fisher – Scott rules – applications to conjugated cyclic ketones and alpha, beta unsaturated cyclic ketones – benzene and its substituted derivatives.		8 hrs		
	3. Differentiation of Geometrical isomers and position isomers.		3 hrs		
Unit II Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs	1. Basic Concepts of Spectroscopy.	02.09.2021	1 hr		
	2. Introduction about IR Spectroscopy	to			
	3. Instrumentation and sampling techniques	24.09.2021	1 hr		
	4. Types of stretching and bending vibrations.		1 hr		
	5. Characteristic group frequencies.		2hrs		
	6. Both internal and external – quantitative studies – organic		1hr		

	<p>structure determination.</p> <p>7. Finger print region</p> <p>8. Identification of functional groups – hydrogen bonding (intermolecular and intramolecular)</p> <p>9. Raman Spectroscopy: Introduction about Raman Spectroscopy.</p> <p>10. Raman Effect –selection rules.</p> <p>11. comparison of IR and Raman spectra.</p> <p>12. Simple molecules-exclusion principle – Fermi resonance</p> <p>13. Laser Raman spectroscopy.</p>		<p>1hr</p> <p>1hr</p> <p>1hr</p> <p>1hr</p> <p>1hr</p> <p>2hr</p> <p>1hr</p>		-
<p>Unit III Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs</p>	<p>1. Chemical shifts and coupling constants (spin-spin coupling involving different nuclei ^1H, ^{31}P, ^{13}C) interpretation and applications to inorganic compounds.</p> <p>2. Effect of quadrupolar nuclei (^2H, ^{10}B, ^{11}B) on the ^1H NMR spectrum.</p> <p>3. NMR of paramagnetic molecules – isotopic shifts, contact and pseudocontact interactions – Lanthanide shift reagents.</p> <p>4. Stereochemistry of non-rigid molecules. Chemical and magnetic non-equivalent, first and second order protons spin-spin splitting- dependence of J on dihedral angle – vicinal and geminal coupling – Karplus equation – long range coupling constant- influence of stereochemical factors on chemical shift of protons – simplification of complex spectra – double resonance technique</p>	<p>25.09.2021 to 21.10.2021</p>	<p>3 hrs</p> <p>3 hrs</p> <p>3 hrs</p> <p>6 hrs</p>		
<p>Unit IV Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs</p>	<p>1. Basic principles – FT-NMR</p> <p>2. Relaxation – broad band</p> <p>3. Decoupling – off resonance decoupling.</p> <p>4. Mossbauer transition and Doppler effect – isomer shift</p> <p>5. Magnetic interactions- Mossbauer emission spectroscopy</p> <p>6. Quadruple effect of magnetic field on spectra –</p>	<p>22.10.2021 to 24.11.2021</p>	<p>2 hrs</p> <p>3 hrs</p> <p>2 hrs</p> <p>2 hrs</p> <p>3 hrs</p> <p>2 hrs</p>		

	7.Simple applications to iron and tin compounds.		1 hr		
Unit V Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs	1. Introduction about ESR Spectroscopy	04.10.2021	1 hr		
	2. Basic principles of ESR.	to			
	3. Characteristics of – hyperfine splitting & selection rule.	08.12.2021	1 hr		
	4. Hyperfine splitting in various structures – Bis (salicyladiminecopper) (II).		1 hr		
	5. Factors affecting the magnitude of the g values.		2hrs		
	6. q values of transition metal ions – dependence on spin – orbit coupling and crystal field effects. Three conditions (i) spin – orbit coupling , crystal field		3hrs		
	ii) strength of crystal field breaking the spin – orbit coupling (iii) very large crystal				
	- Krammersdegeneracy .				
	7.Magnitude of zero field splitting and signal.		1 hr		
	8. Effective spin mixing of states and zero field splitting.		2 hrs		
	10.Line width in solid state EPR.		1hr		
	11.Spin – Lattice relaxation.		1hr		
	12.Spin – Spin relaxation.		1hr		
13.Exchange processes.		1hr			

D. ACTIVITIES

Activities Name	Details
Test	Monthly Test- Unit-II (September) CIA / Mid Semester – Unit-I ,II& III (first ½ portion)- 2 ½ Unit(October) CIA / Model Examination -Unit-III(Second 1/2 Unit) , Unit IV & Unit-V- 2 ½ Units (November)
Assignment	Assignment I – Unit –II (September) Assignment II– Unit – V (November)
Quiz	Two Mark Quiz Test - Unit I – Unit – V (November)
Seminar	Unit –V (October)
Tutorial Ward Meeting	Monthly once


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TEACHERS PLAN

A. GENERAL INFORMATION

Name of the Faculty : Ms.N.P.RUDRA SHOWDRI
 Department : Chemistry
 Programme : II M.Sc
 Programme Code : PGQK
 Name of the Paper : PHYSICAL CHEMISTRY II
 Lecture Hours / Practical Hours : 3 Hrs / Week/ Lecture Hours

B. ABOUT THE COURSE

Course Objectives	Course Outcomes	Teaching Methodology
<ul style="list-style-type: none"> To study the electrokinetic phenomena and electrochemical oxidation and reduction. To understand the absorption isotherms. 	On completion of the Course, Students should be able to <ul style="list-style-type: none"> To learn the concepts and applications of wave mechanics. To understand the quantum chemistry applications of chemical bonding. To impart depth knowledge about born-oppenheimer approximation and huckel electron theory. 	1. Chalk and Talk 2. Power point. 3. e- Module

C. PLAN OF THE WORK

Unit / Modules	Topic to be covered	Proposed date	Lecture Hours	Practical Hours	Remarks	
Unit I Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs	QUANTUM CHEMISTRY – I 1.General principles and basic assumptions Classical mechanics Lagrangian and Hamiltonian equations of motion 3.Inadequacy of classical mechanics.Wave particle dualism – uncertainty principle 4.Postulates of quantum mechanics – operator algebra – operator, linear and Hermitian, eigen					
				2 hrs		
				2hrs		
				3hrs		-
				2hrs		-
		11.08.2021 to 24.08.2021	2hrs			
			2hrs			

	<p>functions and eigen values, angular momentum operator, commutation relations.</p> <p>5. Particle in a box – one and three dimensional, quantum numbers, zero – point energy – orthogonality and normalization.</p>		2hrs		
<p>Unit II Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs</p>	<p>QUANTUM CHEMISTRY – II</p> <ol style="list-style-type: none"> 1. Rigid rotator – harmonic oscillator rotational and vibrational quantum numbers 2. Selection rules for rotational and vibrational transitions. Bohr’s correspondence principle. Hydrogen atom – shapes and nodal properties of orbitals. 3. Wave functions – one electron orbital – Pauli’s principles and Slater determinants – variation method application to hydrogen and helium atoms 4. Perturbation method for non degenerate systems – application of perturbation theory to helium atom. 5. Hartree – Foekself-consistent field method 6. L-S and J-Jcoupling 	<p>26.08.2021 To 14.09.2021</p>	<p>2 hrs</p> <p>1hr</p> <p>2hrs</p> <p>2hrs</p> <p>1hr</p>	-	-
<p>Unit III Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs</p>	<ol style="list-style-type: none"> 1. Born – Oppenheimer approximation: Hydrogen molecule ion. 2. LCAO – MO and VB treatments of the hydrogen molecule; electron density, forces and their role in chemical bonding. 3. Hybridization and valence molecular orbitals of H₂O, NH₃. 4. Huckel pi-electron theory and its application to ethylene, butadiene and benzene 	<p>15.09.2021 To 25.09.2021</p>	<p>2hrs</p> <p>3hrs</p> <p>3hrs</p> <p>2hrs</p>		

Unit IV Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs	SURFACE PHENOMENA 1.Adsorption and free energy reaction at interfaces – physisorption and chemisorption – potential energy diagrams, 2.Lannard– Langmuir, BET isotherms – heats of adsorption, determination. 3.Adsorption from solutions. Gibb’s adsorption isotherm 4.Solid and liquid interfaces – wetting and contact angle – solid gas interfaces – soluble and insoluble film. 5.Surface tension – electrical phenomenon at interfaces, including electrokinetic, micelles and reverse micelles , solubilisation, 6.Micro – emulsions or Miceller emulsions. 7.Application of photoelectron spectroscopy, ESCA and Auger spectroscopy to the study of surfaces. 8.Role of surface in catalysis semiconductor catalysis n and p type surfaces – kinetics of surface reactions involving adsorbed species 9.Langmuir –	27.09.2021 To 22.10.2021	3hrs	3hrs	3hrs	3hrs	3hrs	2 hrs
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	Hinshelwood mechanism, Langmuir – Rideal mechanism and Rideal – Eley mechanisms.				
Unit V Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs	ELECTROKINETIC PHENOMENA 1.Electrical double layer potential – theory of multilayers at electrode – electrolyte interface – double layer capacity – 2.Electrokinetic phenomena Zeta potential, electro osmosis and sedimentation potential Process at electrodes – 3.The rate of charge transfer – current density – Butler – Volmer equation – 4.Tafel equation. 5.Principles of electrodeposition of metals, electrochemical corrosion, metals constructions 6.Prevention of corrosion – Electrochemical oxidations and reduction.Electrochemical energy – storage systems primary and secondary batteries – fuel cells	23.11.2021 to 21.12.2021	3hrs 3hrs 3hrs 2hrs 2hrs 2hrs 3 hrs	-	-

D. ACTIVITIES

Activities Name	Details
Test	Monthly Test- Unit-I (November) CIA / Mid Semester – Unit-I ,II(1/2 Unit) & IV (October) CIA / Model Examination -Unit-II(second 1/2 Unit), Unit III & Unit-V- 2 ½

Assignment	Units (November) Assignment I –Unit –I (October) Assignment II– Unit –I and Unit – II (November)
Quiz	Two Mark Quiz Test - Unit III – Unit – IV (December)
Seminar	Monthly once
Tutorial Ward Meeting	



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A. GENERAL INFORMATION

Name of the Faculty : Mrs. S. Malathy
Department : Chemistry
Programme : M.Sc
Programme Code : PGQLY
Name of the Paper : PHYSICAL CHEMISTRY PRACTICAL – I
Lecture Hours / Practical Hours : 6 Hrs / Week / Practical Hours

B. ABOUT THE COURSE

Course Objectives	Course Outcomes	Practical Methodology
<ul style="list-style-type: none">To study the kinetics of some reactions.To learn the technique of developing phase diagram of some binary systems.Students learn and understand the effect of ionic strength on the rate of constant.	<p>On completion of the Course, Students should be able to</p> <ul style="list-style-type: none">Draw the phase diagram 3 component systems and analyze itDetermine the kinetics of the reactionsPredict the concentration of two analytes in a mixture	<ul style="list-style-type: none">Students has to be in time for the laboratoryStudents are not allowed into the lab without prepared Observation Note.A student has to complete the practical and calculations at the stipulated time give to them.Students have to receive the signature in the observation note on the same day or on or before entering the next practical class.

C. PLAN OF THE WORK

Unit / Modules	Topic to be covered	Proposed date	Lecture Hours	Practical Hours	Remarks
	Basic Concepts Procedure Given	14.12.2021		6 Hrs	
	1. Determination of CST and study of the effect of impurity to CST. 2. Determination of distribution coefficient and determination of equilibrium constant for the formation of KI ₃ .	24.08.2021 to 01.09.2021	-	6 Hrs 6 Hrs	-
	3. Determination of the rate Constant for Persulphate Oxidation, both by titrimetry and clock reaction. 4. Comparison of acid strengths by Kinetics. 5. Determination of the energy of activation and frequency factor. 6. Association factor of benzoic acid between benzene and water. 7. Determination of molecular weight by Rast macro method.	08.09.2021 to 09.10.2021	-	6 Hrs 6 Hrs 6 Hrs 6 Hrs 6 Hrs	

	8. Phase diagram – simple eutectic system.			6 Hrs	
	9. Phase diagram – three component system.			6 Hrs	
	10. Adsorption of oxalic acid on charcoal.			6 Hrs	

D. ACTIVITIES

Activities Name	Details
Repetition Class Observation Correction Record Correction Mid Semester Model Practical	11.10.2020 to 21.10.2021



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A. GENERAL INFORMATION

Name of the Faculty : Dr.J.Bhuvana
 Department : Chemistry
 Programme : M.Sc
 Programme Code : MQE2
 Name of the Paper : Industrial Chemistry
 Lecture Hours / Practical Hours : 6 Hrs / Week/ Lecture Hours

B. ABOUT THE COURSE

Course Objectives	Course Outcomes	Teaching Methodology
<ul style="list-style-type: none"> To understand and develop efficacy in planning, designing, production processing and Marketing To study water testing treatment and petroleum refining. To acquire in depth knowledge of basic and applied area of industry chemistry. To know the industrial production of soaps, detergents and perfumes. To learn the process of photography 	<p>On completion of the Course, Students should be able to</p> <ul style="list-style-type: none"> Identify and understand the unit operations involved in a process Design common heat exchangers like double pipe and shell & tube to determine relevant design parameters. Understand the commercial processes used for the refining and processing of natural gas and crude petroleum. Solve materials and energy balances alone and simultaneously on chemical process system 	<ol style="list-style-type: none"> Chalk and Talk Power point. e- Module

C. PLAN OF THE WORK

Unit / Modules	Topic to be covered	Proposed date	Lecture Hours	Practical Hours	Remarks
Unit I Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs	BASIC IDEAS ABOUT UNIT OPERATION Basic ideas about unit operation	03.09.21 to 22.09.21	2 hrs		
	Flow chart of unit operation		2hrs		
	Chemical conversion and Batch versus continuous processing		3hrs	-	
	Chemical process selection and Design of chemical process control		2hrs	-	
	Chemical process economics – market evaluation – plant		2hrs		

	location				
	Management in productivity and creativity		2hrs		
	Research & development and its role in chemical industries		2hrs		
Unit II Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs	PETROLEUM AND DETERGENTS Water conditioning for chemical factories – reuse – methods of conditioning demineralization – precipitation – desalting Industrial and sewage waste water treatment. Vegetable oils – Refining of edible oils Solvent extraction – processing of animal fat hydrogenation – inter esterification Manufacture of soap from oils. Petroleum:Origin, refining, cracking, reforming, knocking and octane number, LPG Synthetic gas, synthetic petrol. Detergents – raw materials – manufacture – Biodegradability of surfactants – methods.	23.09.21 to 18.10.21	2 hrs 2 hr 2hrs 2hrs 1hr 2hrs 2hrs 2hrs	-	-
Unit III Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs	PULP, PAPER AND PLASTICS Pulp and paper industries – Sulphite, Sulphate, Soda, Ground wood pulp for paper Manufacture of paper – speciality paper – paper stock – structural boards. Plastics – manufacture – resin – manufacturing processes – condensation polymerization	20.10.21 to 08.11.21	2hrs 3hrs 3hrs		

	<p>Manufacture of laminates and other derivatives</p> <p>Wood conversions – Hydrolytic wood</p> <p>Phenolic treatment wood</p> <p>Chip wood and their manufacture & advantages – fire retarding wood.</p>		<p>2hrs</p> <p>1hr</p> <p>1hr</p> <p>3hrs</p>		
<p>Unit IV Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs</p>	<p>PERFUMES</p> <p>Introduction-Definition-economics and uses of perfumes</p> <p>Production of natural and synthetic perfumes</p> <p>Flower perfumes</p> <p>Fruit flavours</p> <p>Artificial flavours</p>	<p>12.11.21 to 30.11.21</p>	<p>3hrs</p> <p>3hrs</p> <p>3hrs</p> <p>3hrs</p> <p>3hrs</p>		
<p>Unit V Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs</p>	<p>CHEMISTRY AND PHOTOGRAPHY</p> <p>Sugar manufacture – starch and related products – miscellaneous starch.</p> <p>Manufacture of industrial alcohol – Butanol acetone – vinegar – acetic acid – citric acid lactic acid all by fermentation.</p> <p>Industrial and military explosives and manufacture pyrotechniques</p> <p>Manufacture of safety matches.</p> <p>Theory of Colour photography, materials and process</p> <p>Special applications of photography.</p>	<p>01.12.21 to 24.12.21</p>	<p>3hrs</p> <p>3hrs</p> <p>3hrs</p> <p>2hrs</p> <p>2hrs</p> <p>2hrs</p>	-	-

D. ACTIVITIES

Activities Name	Details
Test	Monthly Test- Unit-I (November) CIA / Mid Semester – Unit-I ,II(1/2 Unit) & IV (November) CIA / Model Examination -Unit-II(second 1/2 Unit), Unit III & Unit-V- 2 ½ Units (December)
Assignment	Assignment I –Unit –I (November) Assignment II– Unit –I and Unit – II (December)
Quiz	Two Mark Quiz Test - Unit III – Unit – IV (December)
Seminar	Unit –V (December)
Tutorial Ward Meeting	Monthly once



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A. GENERAL INFORMATION

Name of the Faculty	: Mrs. S .Malathy
Department	: Chemistry
Programme	: M.Sc
Programme Code	: PGQE3
Name of the Paper	: Green chemistry
Lecture Hours / Practical Hours	: 6 Hrs / Week/ Lecture Hours

B. ABOUT THE COURSE

Course Objectives	Course Outcomes	Teaching Methodology
<ul style="list-style-type: none">• Study the basic principles and alternative materials of sustainable green chemistry.• Learn the synthesis of ionic liquids and phase transfer catalysis.• Impart depth knowledge in supported catalysis and bio catalysis.• Gain knowledge about the alternative synthesis, reagent and reaction condition of green chemistry.• Focus on the application of greener routes to improve industrial processes and to produce important products.	<p>Course Outcomes: On completion of the course the learner will be able to</p> <ul style="list-style-type: none">• Able to work in quality control or analytical laboratories.• Identify industrial problems related to chemistry and find solutions for them• Gain knowledge about paints and vehicles• Reduce waste generation, effective handlings utilization and recycling of waste• Explain the relationship between the structure and biological activity of drug molecule.	<ul style="list-style-type: none">• Chalk and Talk• Powerpoint.• e-Module

C. PLAN OF THEWORK

Unit / Modules	Topic to be covered	Proposed date	Lecture Hours	Practical Hours	Remarks
Unit I Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs	GREENCHEMISTRY– 1. relevance and goals, Anastas, twelve principles of green chemistry 2. Tools of green chemistry, alternative starting materials, 3. Alternative reagent, catalysts, 4. Alternative solvents 5. Alternative processes with suitable examples.	09.08.2021 to 25.08.2021	4 hrs 1 hrs 4hrs 2 hrs 2 hrs		
Unit II Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs	MICROWAVE ACTIVATION ORGANIC SYNTHESIS (MAOS) 1. Microwave activation – advantage of microwave exposure – specific effects of microwave 2. Neat reactions – solid supports reactions 3. Functional group transformations – condensations reactions 4. Oxidations-reductions reactions 5. Multi-component reactions	26.08.2021 to 04.09.2021	4hrs 2 hrs 4hrs 2hrs 2hrs		
Unit III Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs	IONIC LIQUIDS AND PTC 1. Introduction – synthesis of ionic liquids 2. Physical properties – applications in alkylation – hydroformylations 3. Epoxidations – synthesis of ethers – Friedel craft reactions – D Knoevengel condensations 3. Wittig reactions	14.09.2021 to 25.09.2021	3hrs 4hrs 4 hrs 4 hrs		

	4. Phase transfer catalyst – synthesis–applications.				
Unit IV Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs	SUPPORTED CATALYSTS AND BIO-CATALYSTS FOR GREEN CHEMISTRY 1.Introduction – the concept of atom economy – supported metal catalysts 2.mesoporoussilica–the use of biocatalysts for green chemistry – modified bio catalysts 3.Fermentation and biotransformations -fine chemicals by microbial fermentations 4. Vitamins and amino acids 5.Baker’s yeast mediated bio-transformations 6.Bio-catalyst mediated Baeyer-Villiger reactions – Microbial polyester synthesis.	04.10.2021 to 22.10.2021	3hrs 3hrs 3 hrs 1 hrs 2 hrs 3 hrs		
Unit V Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs	Alternative synthesis, reagents and reaction conditions 1.A photochemical alternative to Friedel-crafts reactions 2.Dimethyl carbonate as a methylating agent 3.The design and applications of green oxidants 4.Super critical carbon dioxide for synthetic chemistry.	26.10.2021 to 17.12.2021	4 hrs 3 hrs 4 hrs 4hrs		

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D. ACTIVITIES

Activities Name	Details
Test	Monthly Test- Unit-I (August) CIA / Mid Semester – Unit-I, III (first ½ portion) & II - 2 ½ Unit (November) CIA / Model Examination - Unit-III (Second 1/2 Unit) , Unit IV & Unit-V- 2 ½ Units (December)
Assignment	Assignment I – Unit – I (August) Assignment II – Unit – II and Unit – IV (October)

Quiz	Two Mark Quiz Test - Unit I – Unit – V (November)
Seminar	Unit –III (December)
Tutorial Ward Meeting	Monthly once



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A. GENERAL INFORMATION

Name of the Faculty : M.Sivagamasundari
Department : Chemistry
Programme : II B.Sc Zoology
Programme Code : BQE2
Name of the Paper : Allied Chemistry
Lecture Hours / Practical Hours : 6 Hrs / Week/Lecture Hours

B. ABOUT THE COURSE

Course Objectives	Course Outcomes	Teaching Methodology
To Learn about Industrial Chemistry To learn about water Chemistry To Understand the Aromatic carbon, Chemotherapy and types of drugs To Learn About acid and base To learn about Chemical Equilibrium, chemical kinetics and catalysis	Students learn about 1. To identify a good fuel and their composition. 2. To apply the water treatment methods. 3. To know about chemical properties of aromatic compounds and drugs 4. To Familiarize the concept of acid- base indicators 5. To apply the concept of chemical kinetics	1. Chalk and Talk 2. Power point. 3. e- Module

B. PLAN OF THE WORK

Unit / Modules	Topic to be covered	Proposed date	Lecture Hours	Practical Hours	Remarks
Unit I Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs	1.Industrial Chemistry- Fuel gases, water gas, Producer gas, LP.G, Gobar gas and Natural gas	11.08.2021 to 26.08.2021	3 hrs	-	
	2.Fertilizer,NPK and mixed fertilizer, micronutrients and their role in plant life and biofertilizers		2hr		
	3. Soap and detergent an elementary idea about preparation and manufacture		3hrs		
	4.Cleaning action of soap		3hrs		
			3hrs		

<p>Unit II Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs</p>	<p>1. Water Chemistry, water types Soft water and hard water 2. Hardness of water, degree of hardness 3. Reverse osmosis and Ion exchange methods principles and techniques 4. Water Analysis, Determination of pH, TDS 5. Total hardness by EDTA, BOD and COD</p>	<p>27.08.2021 to 17.09.2021</p>	<p>3hrs 2hrs 3hrs 3hrs 3hrs 1 hrs 3hrs</p>		
<p>Unit- III Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs</p>	<p>1. Aromatic Compounds - Structure, stability, resonance and aromaticity of benzene. Typical substitution reaction- Nitration, Halogenation, alkylation. 2. Chemotherapy - Explanations with two examples each for i) Analgesics ii) Antibacterial iii) Anti-inflammatory iv) Antipyretic v) Antibiotic vi) Antitubercular 3. vii) Antiviral viii) Antitussive ix) Antiallergic x) Antidiabetics xi) Antihypertensive xii) Antiepileptics xiii) Tranquilizers xiv) Antiseptic and</p>	<p>24.09.2021 to 28.10.2022</p>	<p>4hrs 3hrs 3hrs 1hrs 3hrs</p>		

	<p>disinfectant</p> <p>xv)Antimalarial</p> <p>xvi) Anaesthetics local and general (Structures not necessary).</p>		3hrs		
<p>Unit- IV</p> <p>Content- 15 Hrs,</p> <p>Assessment -3 Hrs</p> <p>Total - 18 Hrs</p>	<p>1. Ionic Equilibria in aqueous solution ,Acids and bases, Arrhenius theory, Lowry – Bronsted concept, lewis concept</p> <p>Self ionization of water – weak acids and bases, dissociation constant, Hydrolysis – buffer solutions, action of buffers – acid base indicators</p> <p>Acid base titrations- basics complex ion equilibria. Corrosion – Types- prevention</p>	<p>21.10.2021 to 15.11.2021</p>	<p>2hrs</p> <p>3hrs</p> <p>3hrs</p> <p>1hr</p> <p>3hrs</p> <p>2hrs</p> <p>1hr</p> <p>3hrs</p>		
<p>Unit -V</p> <p>Content- 15 Hrs,</p> <p>Assessment -3 Hrs</p> <p>Total - 18 Hrs</p>	<p>1 .Chemical Equilibrium - Criteria of homogeneous and heterogeneous equilibria. Decomposition of HI, N₂O₄, CaCO₃ and PCl₅</p> <p>2 Chemical Kinetics -Order of reactions and their determinations. Activation energy, effect of temperature on reaction rate.</p> <p>3. Catalysis -Types, mechanism of catalytic reactions, industrial applications.</p>	<p>17.11.2021 to 14.12.2021</p>	<p>3hrs</p> <p>2hrs</p> <p>3hrs</p> <p>4hrs</p> <p>3hrs</p> <p>3hrs</p>		

D. ACTIVITIES

Activities Name	Details
Test	Monthly Test- Unit-I (August)
Assignment	CIA / Mid Semester – Unit-I ,II(1/2 Unit) & IV (September)
Quiz	CIA / Model Examination -Unit-II(second 1/2 Unit), Unit III & Unit-V- 2 ½
Seminar	Assignment I –Unit –I and Unit –II (September)
Tutorial Ward Meeting	Assignment II– Unit –III and Unit – IV (October)
Quiz	Two Mark Quiz Test - Unit I – Unit – V (October)
Seminar	Unit –V (October)
Tutorial Ward Meeting	Monthly once



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A. GENERAL INFORMATION

Name of the Faculty : A.FLORA
Department : Chemistry
Programme :II B.Sc Physics
Programme Code :UQA1
Name of the Paper : Allied Chemistry
Lecture Hours / Practical Hours :6 Hrs / Week/Lecture Hours

B. ABOUT THE COURSE

Course Objectives	Course Outcomes	Teaching Methodology
To Learn about Industrial Chemistry To learn about water Chemistry To Understand the Aromatic carbon, Chemotherapy and types of drugs To Learn About acid and base To learn about Chemical Equilibrium, chemical kinetics and catalysis	Students learn about 1. To identify a good fuel and their composition. 2. To apply the water treatment methods. 3. To know about chemical properties of aromatic compounds and drugs 4. To Familiarize the concept of acid- base indicators 5. To apply the concept of chemical kinetics	1. Chalk and Talk 2. Power point. 3. e- Module

C. PLAN OF THE WORK

Unit / Modules	Topic to be covered	Proposed date	Lecture Hours	Practical Hours	Remarks
Unit I Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs	1.Industrial Chemistry- Fuel gases, water gas, Producer gas, LP.G, Gobar gas and Natural gas	11.08.2021 to 26.08.2021	3 hrs		
	2.Fertilizer,NPK and mixed fertilizer, micronutrients and their role in plant life and biofertilizers		2hr		
	3. Soap and detergent an elementary idea about preparation and manufacture		3hrs		
	4.Cleaning action of soap		3hrs		

<p>Unit II Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs</p>	<p>1.Polar Effects - Inductive effect- Relative strength of aliphatic monocarboxylic acids and aliphatic amines Resonance-conditions for resonance, consequences of resonance-resonance energy-Basic property of aniline and acidic property of phenol. 2 .Hyper conjugation - consequences of hyper conjugation- Heat of hydrogenation, bond length and dipolemoment.Steric effect – Steric accelerated reaction and steric inhibited reaction.</p>	<p>27.08.2021 to 17.09.2021</p>	<p>3hrs 2hrs 3hrs 3hrs 3hrs 1 hrs 3hrs</p>		
<p>Unit- III Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs</p>	<p>1. Aromatic Compounds - Structure, stability, resonance and aromaticity of benzene. Typical substitution reaction- Nitration, Halogenation, alkylation. 2. Chemotherapy - Explanations with two examples each for i)Analgesics ii) Antibacterial iii)Anti-inflammatory iv) Antipyretic v)Antibiotic vi) Antitubercular 3.vii)Antiviral viii) Antitussive ix) Antiallergic x) Antidiabetics xi) Antihypertensive xii)Antiepileptics</p>	<p>24.09.2021 to 28.10.2022</p>	<p>4hrs 3hrs 3hrs 1hrs 3hrs</p>		

	<p>xiii)Tranquilizers</p> <p>xiv)Antiseptic and disinfectant</p> <p>xv)Antimalarial</p> <p>xvi) Anaesthetics local and general (Structures not necessary).</p>		3hrs		
<p>Unit- IV Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs</p>	<p>1. Solid State- Typical crystal lattices – unit cell . Elements of symmetry. Bragg’s equation, Weiss indices, Miller indices, simple, body centred and face centred cubes.</p> <p>2 .Energetic - Review of first law of thermodynamics- state and path functions- need for the second law-</p> <p>Carnot’s cycle and thermodynamic scale of temperature, Entropy- Gibb’s free energy.</p> <p>Entropy change and free energy change to decide spontaneity.</p> <p>Elementary idea of third law- statement and explanation.</p>	<p>21.10.2021 to 15.11.2021</p>	<p>2hrs</p> <p>3hrs</p> <p>3hrs</p> <p>1hr</p> <p>3hrs</p> <p>2hrs</p> <p>1hr</p> <p>3hrs</p>		
<p>Unit -V Content- 15 Hrs, Assessment -3 Hrs Total - 18 Hrs</p>	<p>1 .Chemical Equilibrium - Criteria of homogeneous and heterogeneous equilibria. Decomposition of HI, N₂O₄, CaCO₃ and PCl₅</p> <p>2 Chemical Kinetics -Order of reactions and their determinations. Activation energy, effect of temperature on reaction rate.</p>	<p>17.11.2021 to 14.12.2021</p>	<p>3hrs</p> <p>2hrs</p> <p>3hrs</p> <p>4hrs</p>		

	3. Catalysis -Types, mechanism of catalytic reactions, industrial applications.		3hrs 3hrs		
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D. ACTIVITIES

Activities Name	Details
Test	Monthly Test- Unit-I (August)
Assignment	CIA / Mid Semester – Unit-I ,II(1/2 Unit) & IV (September) CIA / Model Examination -Unit-II(second 1/2 Unit), Unit III & Unit-V- 2 ½ Assignment I –Unit –I and Unit –II (September) Assignment II– Unit –III and Unit – IV (October)
Quiz	Two Mark Quiz Test - Unit I – Unit – V (October)
Seminar	
Tutorial Ward Meeting	Unit –V (October) Monthly once



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TEACHERS PLAN

A. GENERAL INFORMATION

Name of the Faculty : Ms.M.Tamilpriya
 Department : Chemistry
 Programme : B.Sc (Allied) – Bio chemistry & Geology
 Programme Code :
 Name of the Paper : Allied Chemistry
 Lecture Hours / Practical Hours : 4 Hrs / Week/ Lecture Hours

B. ABOUT THE COURSE

Course Objectives	Course Outcomes	Teaching Methodology
<input type="checkbox"/> To study about Industrial Chemistry <input type="checkbox"/> To know about principles and techniques in water <input type="checkbox"/> To Study the properties of aromatic compounds <input type="checkbox"/> To learn the concepts of Chemical equilibrium <input type="checkbox"/> To acquire knowledge about chemical kinetics and catalyst	1. To identify a good fuel and their composition. 2. To apply the water treatment methods. 3. To know about chemical properties of aromatic compounds and drugs 4. To Familiarize the concept of acid- base indicators 5. To apply the concept of chemical kinetics	1. Chalk and Talk 2. Power Point 3. e - Module

C. PLAN OF THE WORK

Unit/ Modules	Topic to be covered	Proposed date	Lecture Hours	Practical Hours	Remarks
Unit – I Content – 9 Hrs Assessment-3 Hrs Total- 12 Hrs	1.Fual gas, producer gas, LPG gas, gobar gas,natural gas 2.Fertilizers NPK 3.Micronutrients fertilizers 4.cleaning action of soap and detergents	22.09.2021 to 07.10.2021	2 hrs 3 hrs 2 hrs 2 hrs		
Unit – II Content – 9 Hrs Assessment-3	1.Types of water, soft and hard water 2.Hardness- degree of hardness	08.10.2021 to 27.10.2021	2 hrs 2 hrs 2 hrs		

Hrs Total- 12 Hrs	3. Reverse osmosis 4. Total hardness by EDTA, BOD, COD		3 hrs		
Unit – III Content – 9 Hrs Assessment-3 Hrs Total- 12 Hrs	Aromatic Compounds- 1. Structure, stability, resonance and aromaticity of benzene. Typical substitution reaction- Nitration, Halogenation, alkylation. 2. Chemotherapy- Explanation with two examples each for i) Analgesics ii) Antibacterial iii) Anti-inflammatory iv) Antipyretic v) Antibiotic 3.vi) Antitubercular vii) Antiviral viii) Antitussive ix) Antiallergic x) Antidiabetics xi) Antihypertensive xii) Antiepileptics 4.xiii) Tranquilizers xiv) Antiseptic and disinfectant xv) Antimalarial xvi) Anaesthetics local and general (Structures not necessary).	28.10.2021 to 16.11.2021	3hrs 2hrs 2hrs 2hrs		
Unit – IV Content – 9 Hrs Assessment-3 Hrs Total- 12 Hrs	Ionic Equilibria in aqueous solution 1. Acids and bases, Arrhenius theory, Lowry, Bronsted concept, Lewis concept 2. Self ionization of water weak acids	22.11.2021 to 07.12.2021	3 hrs 2 hrs 2hrs		

	and bases, dissociation constant, Hydrolysis 3.buffer solutions, action of buffers acid base indicators acid base titrations basics complex ion equilibria. 4.Corrosion Types prevention.		2hrs		
Unit – V Content – 9 Hrs Assessment-3 Hrs Total- 12 Hrs	Chemical Equilibrium – 1.Criteria of homogeneous and heterogeneous equilibria. Decomposition of HI, N ₂ O ₄ , CaCO ₃ and PCl ₅ Chemical Kinetics- 2.Order of reactions and their determinations. Activation energy, effect of temperature on reaction rate. 3.Catalysis -Types, mechanism of catalytic reactions, industrial applications.	10.12.2021 to 23.12.2021	3hrs 3hrs 3hrs		

C. ACTIVITIES

Activities Name	Details
Test	Monthly Test – Unit – I (November) CIA/Mid semester – Unit – I, II (first 1/2 portion) & III – 2 1/2 Unit(November) CIA/Modal Examination – Unit – II(second 1 /2 Unit) Unit – IV& Unit – V -2 1/2 Units (December)
Assignment	Assignment I – Unit – I (November) Assignment II – Unit – II and Unit -IV(December)

Quiz	Two mark Quiz Test – Unit- I – Unit – V (December)
Seminar Tutorial ward meeting	Monthly Onces



PRINCIPAL

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A. GENERAL INFORMATION

Name of the Faculty :Mrs.M.Sivagamasundari
Department : Chemistry
Programme : B.Sc
Programme Code : BQA2Y
Name of the Paper : Allied Chemistry Practical Zoology
Lecture Hours / Practical Hours : 2Hrs / Week / Practical Hours

B. ABOUT THE COURSE

Course Objectives	Course Outcomes	Practical Methodology
		<ul style="list-style-type: none">• Students has to be in time for the laboratory• Students are not allowed into the lab without prepared Observation Note.• A student has to complete the practical and calculations at the stipulated time give to them.• Students have to receive the signature in the observation note on the same day or on or before entering the next practical class.

C. PLAN OF THE WORK

Unit / Modules	Topic to be covered	Proposed date	Lecture Hours	Practical Hours	Remarks
	Volumetric Analysis – Basic Concepts	12.08.2021 to 19.08.2021		2 Hrs	
	Volumetric Analysis - Concentrations Units		-	2Hrs	-
	Procedure Given	06.09.2021 to 27.10.2021		2hrs 2Hrs	
	Estimation of Hydrochloric acid		-	2Hrs	
	Estimation of Sodium Hydroxide			2Hrs	
	Estimation of Oxalic acid			2Hrs 2Hrs	
	Estimation of Ferrous ion	09.11.2021 to 02.12.2021		2Hrs	
	Estimation of Copper Sulphate			2Hrs	
	Estimation of Potassium permanganate				
	Organic Analysis – Basic principles.			2 hrs	
	Organic Analysis – I	28.02.2021 to 20.04.2021		2hrs	
	Organic Analysis – II			2hrs	
	Organic Analysis – III			2hrs	
	Organic Analysis – IV			2hrs	
	Organic Analysis – V			2hrs	
	Organic Analysis – VI			2hrs	
	Organic Analysis –VII			2hrs	

D. ACTIVITIES

Activities Name	Details
Repetition Class Observation Correction Record Correction Mid Semester Model Practical	21.04.2021 to 16.05.2021

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TEACHERS PLAN

A. GENERAL INFORMATION

Name of the Faculty : Mrs. A. Rakini
Department : Chemistry
Programme : B.Sc
Programme Code : QUA2Y
Name of the Paper : Allied Chemistry Practical (Physics)
Lecture Hours / Practical Hours : Odd-2Hrs / Week / Practical Hours

B. ABOUT THE COURSE

Course Objectives	Course Outcomes	Practical Methodology
<ul style="list-style-type: none">To perform the qualitative analysis of a given organic mixture	<ul style="list-style-type: none">To provide training on volumetric analysisTo acquire knowledge about organic compounds	<ul style="list-style-type: none">Students has to be in time for the laboratoryStudents are not allowed into the lab without prepared Observation Note.A student has to complete the practical and calculations at the stipulated time give to them.Students have to receive the signature in the observation note on the same day or on or before entering the next practical class.

C. PLAN OF THE WORK

Unit / Modules	Topic to be covered	Proposed date	Lecture Hours	Practical Hours	Remarks
	Volumetric Analysis – Basic Concepts	12.08.2021 to 18.08.2021		2 Hrs	
	Volumetric Analysis - Concentrations Units			2Hrs	
	Procedure Given			2hrs	
	Estimation of Hydrochloric acid	06.09.2021 to 02.11.2021		2Hrs	
	Estimation of Sodium Hydroxide		-	2Hrs	
	Estimation of Oxalic acid			2Hrs	-

	Estimation of Ferrous ion	09.11.2021 to		2Hrs	
	Estimation of Copper Sulphate	02.12.2021	-	2Hrs	
	Estimation of Potassium permanganate			2Hrs	
	Organic Analysis – Basic principles.	28.02.2022 to		3hrs	
	Organic Analysis – I	20.04.2022		3 hrs	
	Organic Analysis – II			3 hrs	
	Organic Analysis – III			3 hrs	
	Organic Analysis – IV			3 hrs	
	Organic Analysis – V			3 hrs	
	Organic Analysis – VI			3 hrs	
	Organic Analysis –VII			3 hrs	

D. ACTIVITIES

Activities Name	Details
Repetition Class Observation Correction Record Correction Mid Semester Model Practical	21 .04.2022 to 16.05.2022



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A. GENERAL INFORMATION

Name of the Faculty : R.MAHESWARI
Department : Chemistry
Programme : I B.Sc., Bio & Geo
Programme Code : QUA2Y
Name of the Paper : Allied Chemistry Practical Bio & Geo
Lecture Hours / Practical Hours : 3Hrs / Week / Practical Hours

B. ABOUT THE COURSE

Course Objectives	Course Outcomes	Practical Methodology
To perform the qualitative analysis of a given organic mixture	To provide training on volumetric analysis To acquire knowledge about organic compounds	<ul style="list-style-type: none">• Students has to be in time for the laboratory• Students are not allowed into the lab without prepared Observation Note.• A student has to complete the practical and calculations at the stipulated time give to them.• Students have to receive the signature in the observation note on the same day or on or before entering the next practical class.

C. PLAN OF THE WORK

Unit / Modules	Topic to be covered	Proposed date	Lecture Hours	Practical Hours	Remarks
	Volumetric Analysis – Basic Concepts	24.9.2021		3 Hrs	
	Volumetric Analysis - Concentrations Units			3Hrs	
	Procedure Given			3hrs	
	Estimation of Hydrochloric acid	1.10.2021 TO		3Hrs	
	Estimation of Sodium Hydroxide	24.11.2021	-	3Hrs	
	Estimation of Oxalic acid			3Hrs	-

Estimation of Ferrous ion			3Hrs
Estimation of Copper Sulphate		-	3Hrs
Estimation of Potassium permanganate			3Hrs
Organic Analysis – Basic principles.	6.12.2021 to 22.12.2021		3 hrs
Organic Analysis – I			3hrs
Organic Analysis – II			3hrs
Organic Analysis – III			3hrs
Organic Analysis – IV			3hrs
Organic Analysis – V			3hrs
Organic Analysis – VI			3hrs
Organic Analysis –VII			3hrs

D. ACTIVITIES

Activities Name	Details
Repetition Class Observation Correction Record Correction Mid Semester Model Practical	24.9.2021 to 22.12.2021



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