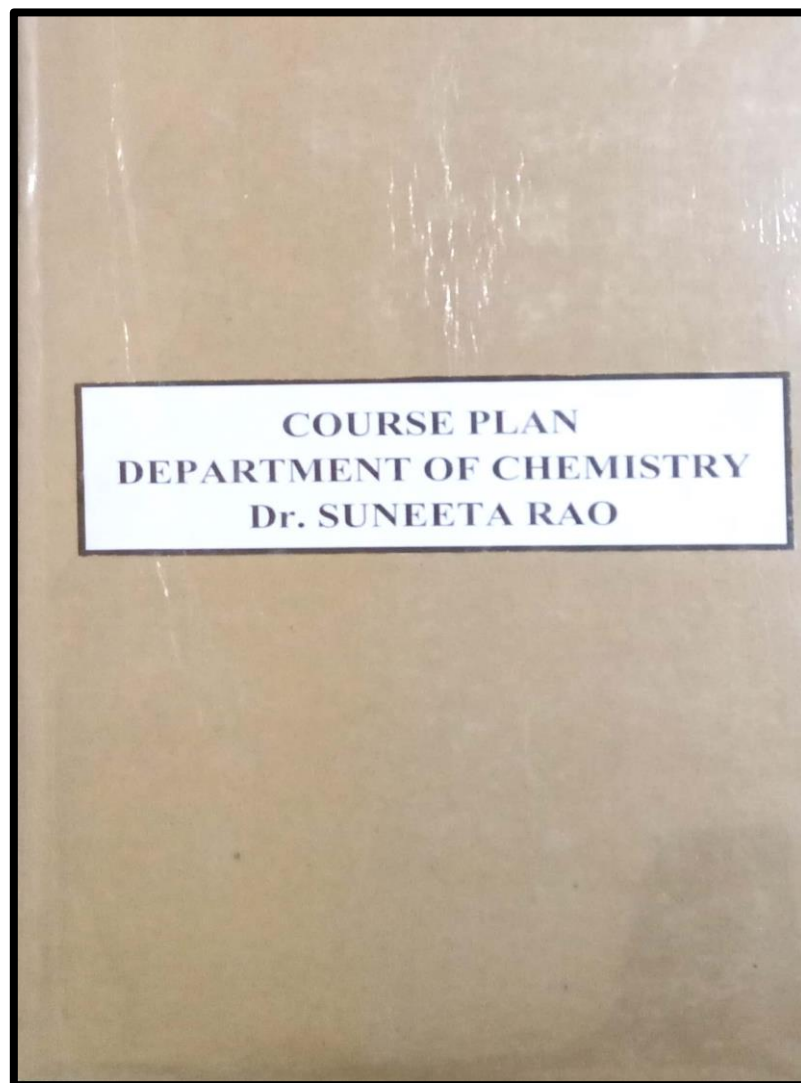




SOPHIA GIRLS' COLLEGE(AUTONOMOUS), AJMER



COURSE_PLAN_2019-20_DR_SUNEETA_RAO



COURSE PLAN

SESSION

2019-20

B sc. Sem I, III

Msc. Sem I, III



B.Sc. I (SEMESTER I)

PRACTICALS (CHE-103)

Max. Marks: 50(40Ext; 10 Int)

Min Marks: 20(16 Ext;4 Int)

Credit: 02

COURSE PLAN

SEM I Month	UNIT/TOPIC	Concepts/facts	Teaching Pedagogy	Learning Outcomes	Questions	Marks Weightage (%)
SEM I JULY	Inorganic Chemistry Semi-micro Analysis- separation and identification of four ions, cation analysis from Groups I, II, III, IV, V and VI, anion analysis including interfering radicals.	Seperation of Inorganic Mixture	Demonstration of the exercise	Understand the practical applications of various aspects of chemistry	<u>Knowledge Based</u> Practical File Work <u>Understanding Based</u> - To Seperate the Inorganic Mixture. -To determine the melting point of the given organic compound. <u>Higher Order Thinking Skills Based</u> Viva Voce	Knowledge--30 Understanding-50 Higher Order-20
AUGUST	<ul style="list-style-type: none"> • Calibration of Thermometer • Determination of Melting Point • Determination of boiling points 	Laboratory Techniques	Exercises with Use of different Apparatus and glasswares			



SEPTEMBER- OCTOBER	<ul style="list-style-type: none">• Distillation• Crystallization• Decolorisation and crystallization using charcoal• Sublimation (Simple and Vacuum)	Laboratory Techniques	Exercises with Use of different Apparatus and glasswares.			
-------------------------------	--	-----------------------	---	--	--	--

Sr Pearl

PRINCIPAL
SOPHIA GIRLS' COLLEGE
(AUTONOMOUS)
AJMER

S Rao

Taxi

Head
Department of Chemistry
Sophia Girls' College
(Autonomous), Ajmer



ORGANIC CHEMISTRY (PAPER II) (CHE-302)

SEM III Month	UNIT/TOPIC	Concepts/facts	Teaching Pedagogy	Learning Outcomes	Questions	Marks Weightage (%)
SEM I JULY	Unit – III Phenols Nomenclature, structure and bonding. Preparation of phenols, physical properties and acidic character. Comparative acidic strengths of alcohols and phenols, resonance stabilization of phenoxide ion. Reactions of phenols-electrophilic aromatic substitution, acylation and carboxylation. Mechanisms of Fries rearrangement, Claisen rearrangement, Gatterman synthesis, Hauben-Hoesch reaction, Lederer-Manasse reaction and Reimer-Tiemann reaction. Ethers and Epoxides Nomenclature of ethers and methods of their formation, physical properties. Chemical reactions-cleavage and autoxidation, Ziesel's method. Synthesis of epoxides.	Structure and reactivity of Phenols and ethers	PPT, Demonstration, Flipped Classroom, Group discussion	Illustrate the preparation and Chemical Reactions of Phenols, ethers and Epoxides	<u>Knowledge Based</u> -What is finger print region in IR spectroscopy? -Discuss the effect of conjugation in UV spectrum <u>Understanding Based</u> -Compare the chemical behaviour of monohydric alcohols and dihydric alcohols. - Compare the acidic strength of phenol and cresol. <u>Higher Order</u>	Knowledge--50 Understanding-35 Higher Order-15




	Acid and base-catalyzed ring opening of epoxides, orientation of epoxide ring opening, reactions of Grignard and organolithium reagents with epoxides				<u>Thinking Skills Based</u> -Discuss the orientation of ring opening of ethers. -How we can differentiate between the pair of $\text{CH}_3\text{CH}_2\text{CHO}$ and CH_3COCH_3 with the help of IR spectral data ?	
AUGUST	<p align="center">Unit – I</p> <p>Spectroscopy Electromagnetic Spectrum: Absorption Spectra</p> <p>Ultraviolet (UV) absorption spectroscopy- absorption laws (Beer-Lambert law), types of electronic transitions, effect of conjugation. Concept of chromophore and auxochrome. Bathchromic, hypsochromic, hyperchromic and hypochromic shifts. UV spectra of conjugated dienes and enones, Application of electronic spectroscopy and Woodward rules for calculating λ_{max} of conjugated dienes and α, β – unsaturated carbonyl compounds.</p> <p>Infrared (IR) absorption spectroscopy-molecular vibrations, Hooke's law, selection rules, intensity and position of IR bands, measurement of IR spectrum, fingerprint region, characteristic</p>	Interpretation of UV and IR spectra and their role in structural elucidation.	PPT, Demonstration, Flipped Classroom	Assess the molecular structure using UV and IR Spectroscopy		



	absorption of various functional groups and interpretation of IR spectra of simple organic compounds.					
SEPTEMBER-OCTOBER	Unit – II Alcohols Classification and nomenclature. Monohydric alcohols-nomenclature, methods of formation, Chemical reactions of alcohols. Dihydric alcohols and trihydric alcohols-nomenclature, methods of formation, chemical reactions of vicinal glycols and pinacol-pinacolone rearrangement. Trihydric alcohols- nomenclature and methods of formation, chemical reactions of glycerol	Structure and reactivity Of monohydric, dihydric and trihydric alcohols.	PPT, Demonstration, Group discussion	Summarize the reactivity of primary, Secondary and tertiary alcohols		


 PRINCIPAL
 SOPHIA GIRLS' COLLEGE
 (AUTONOMOUS)
 AJMER




 Head
 Department of Chemistry
 Sophia Girls' College
 (Autonomous), Ajmer



SOPHIA GIRLS' COLLEGE, AJMER (*AUTONOMOUS*)
M.Sc. CHEMISTRY (PREVIOUS)
SEMESTER I

ORGANIC REACTION MECHANISM I (CHEM-102)

MAX MARKS: 100(70EXT; 30 INT)

MIN. MARKS: 40(28 EXT;12 INT)

COURSE PLAN

SEM/ Month	Unit/Topic	Concepts/facts	Teaching Pedagogy	Learning Outcomes	Questions	Marks Weightage (%)
SEM I JULY	UNIT I Aromaticity in benzenoid and non benzenoid compounds, Huckel's rule, energy level of π molecular orbital, annulenes, anti aromaticity, homoaromaticity.	Nature of Bonding in organic molecules	Diagrams, Charts	Predict structure and bonding in common organic molecules and mechanism of organic reactions.	<u>Knowledge Based</u> - What is Antiaromaticity ? Explain briefly. - Define Homoaromaticity.	Knowledge-25 Understanding-45 Higher Order-30



	Types of reactions and mechanisms. General methods for the determination of reaction mechanism – stereochemical evidences, kinetic evidences and isotope effects. Thermodynamic and kinetic requirements for a reaction.	Structure and Reactivity of organic compounds	3 D models, Charts		<u>Understanding Based</u> -Compare the aromaticity of tropone and tropolone. - Classify the aromatic behavior of (14)-and (18)-Annulenes	
AUGUST	UNIT II SN^2 , SN^1 , mixed and SET mechanism	Aliphatic Nucleophilic substitution	Diagrams, Demonstration	Review various aliphatic and aromatic substitution reactions.	<u>Higher Order Thinking Skills Based</u> - Explain $ArSN^2$ with suitable examples. - Elaborate primary kinetic isotope effect and secondary kinetic isotope effects.	
	$ArSN^1$, $ArSN^2$, benzyne and $SRN1$ mechanism. Reactivity-effect of substrate structure, leaving group and attacking nucleophile. The von Richter, Sommelet-Hauser and Smiles rearrangements.	Aromatic Nucleophilic Substitution	Flowcharts, PPT			



	Bimolecular mechanism, SE1 mechanism, electrophilic substitution accompanied by double bond shifts. Effect of substrates, leaving group and the solvent polarity.	Aliphatic Electrophilic Substitution	3D Models, PPT			
	Arenium ion mechanism, orientation and reactivity, energy profile diagrams. ortho/para ratio, ipso attack, orientation in other ring system. quantitative treatment of reactivity in substrates and electrophiles. Diazonium coupling, Vismier reaction, Gattermann-koch reaction.	Aromatic Electrophilic Substitution	Demonstration, PPT			
SEPTEMBER-OCTOBER	Free radical reactions and mechanism, neighbouring group assistance. Reactivity for aliphatic and aromatic substrates at a bridgehead. Effect of solvent on reactivity. Allylic halogenations(NBS),	Free Radical Reactions	Flipped Classrooms, Demonstration	Explain different types of free radical reactions		



	oxidation of aldehydes to carboxylic acids, coupling of alkynes and arylation of aromatic compounds by diazonium salts, Sandmeyer reaction. Free radical rearrangement, Hunsdiecker reaction.					
--	---	--	--	--	--	--

S. Pearl
PRINCIPAL
SOPHIA GIRLS' COLLEGE
(AUTONOMOUS)
AJMER


S. Rao

Tar
Head
Department of Chemistry
Sophia Girls' College
(Autonomous), Ajmer



SOPHIA GIRLS' COLLEGE, AJMER (AUTONOMOUS)
M.SC CHEMISTRY (PREVIOUS)
Practicals (CHEM-105)

AUGUST	Organic Chemistry Qualitative Analysis Separation, purification and identification of compounds of binary mixture (two solids). Quantitative Analysis (a) Determination of Iodine value of an oil sample. (b) Determination of Acid Value of an oil sample. (c) Determination of Saponification value of an oil sample.	Qualitative Analysis and Quantitative Analysis	Demonstration of the exercise	Understand the practical applications of various aspects of chemistry	<u>Knowledge Based</u> - Practical File Work <u>Understanding Based</u> - To separate and identify the components of the given organic ternary mixture. <u>Higher Order Thinking Skills Based</u> - Viva Voce	Knowledge--20 Understanding-40 Higher Order-40
---------------	--	---	-------------------------------	---	--	--


PRINCIPAL
SOPHIA GIRLS' COLLEGE
(AUTONOMOUS)
AJMER




Head
Department of Chemistry
Sophia Girls' College
(Autonomous), Ajmer



SOPHIA GIRLS' COLLEGE, AJMER (AUTONOMOUS)
M.SC CHEMISTRY (FINAL)
SEMESTER III (M.Sc. F)


PHOTOCHEMISTRY AND SOLID STATE CHEMISTRY (CHEM-302)

MAX MARKS: 100 (70EXT; 30 INT)

MIN. MARKS: 40 (28 EXT;12 INT)

COURSE PLAN

SEM/ Month	UNIT/TOPIC	Concepts/facts	Teaching Pedagogy	Learning Outcomes	Questions	Marks Weightage (%)
SEM III JULY	Unit-I Metals, insulators and semiconductors, electronic structure of solids- band theory. Intrinsic and extrinsic semiconductors, doping semiconductors, p-n junction.	Conduction in various solids	Diagrams, Quiz	Illustrate solid state chemistry	<u>Knowledge Based</u> - Define Superconductors. -What is actinometry? <u>Understanding Based</u> - Classify Superconductors on the basis of critical temperature and theory of operation. - Discuss mechanism of 1,2-	Knowledge-25 Understanding-45 Higher Order-30
	Definition, types and BCS theory, Optical properties- photoconduction- photoelectric effects. Magnetic Properties- Classification of materials-	Basics of Super conductors and magnetic properties of various materials.	PPT, Charts			


		magnetic domains, hysteresis.				alkyl shift in photochemical isomerization of aromatic compounds.
	AUGUST	Unit-II Interaction of electromagnetic radiation with matter, type of excitations, fate of excited molecule, quantum yield, transfer of excitation energy, actinometry.	Photochemical Reactions	Quiz, PPT, Flow charts	Analyze photochemical reactions.	<u>Higher Order Thinking Skills Based</u> - Explain Norrish Type -I photochemical reactions of carbonyl compounds. - Discuss the following reactions with mechanism and suitable examples- (i) Photo-Fries rearrangement (ii) Barton reaction
		Classification, rate constants and life time of reactive energy state- determination of rate constants of reactions. Effect of light intensity on the rate of photochemical reactions. Type of photochemical reactions.	Determination of Reaction Mechanism	Flow charts, PPT		
		Intermolecular reactions of the olefinic bond-geometrical isomerism cyclisation reaction, rearrangement of 1,4-and 1,5-dienes.	Photochemistry of Alkenes	Demonstration, Quiz		
	SEPTEMBER- OCTOBER	Unit-III Intermolecular reactions of the carbonyl compounds,	Photochemistry of Carbonyl Compounds	Diagrams, Flow charts	Elaborate the photochemistry of various organic compounds.	



	Intermolecular cycloaddition reaction.					
	Isomerisations, additions and substitutions.	Photochemistry of Aromatic Compounds	Quiz, Flow charts			
	Photo-Fries reactions of anilides. Photo-Fries rearrangement. Barton reaction. Singlet molecular oxygen reactions. Photochemical formation of smog. Photo Degradation of polymers.	Miscellaneous Photochemical Reactions	PPT, Demonstration			


PRINCIPAL
SOPHIA GIRLS' COLLEGE
(AUTONOMOUS)
AJMER




Head
Department of Chemistry
Sophia Girls' College
(Autonomous), Ajmer



Course Plan

Session - 2019-20

Even Semesters

B.Sc. Sem II, IV

M.Sc. Sem II, IV



B.Sc. I (SEMESTER II)

PRACTICALS (CHE-203)

Max. Marks: 50(40Ext; 10 Int)

Min Marks: 20(16 Ext;4 Int)

Credit: 02

COURSE PLAN

SEM II Month	UNIT/TOPIC	Concepts/facts	Teaching Pedagogy	Learning Outcomes	Questions	Marks Weightage (%)
SEM II DECEMBER- JANUARY	1. Organic Chemistry Qualitative Analysis Detection of extra elements (N,S and halogens) and functional groups (phenolic, carboxylic, carbonyl, esters, carbohydrates, amines, amides, nitro and anilide) in simple organic compounds.	Identification of Functional Groups	Demonstration of the exercise	Understand the practical applications of various aspects of chemistry	<u>Knowledge Based</u> Practical File Work <u>Understanding Based</u> - To identify the functional group in the given organic compound. - To determine the specific reaction rate of the hydrolysis of methyl acetate/ ethyl acetate catalyzed by hydrogen ions at room temperature.	Knowledge--30 Understanding-50 Higher Order-20
FEBRUARY	<ul style="list-style-type: none"> To determine the specific reaction rate of the hydrolysis of methyl acetate/ ethyl acetate catalyzed by hydrogen ions at room temperature. To study the effect of acid strength on the hydrolysis of an ester. 	Kinetics of Chemical reactions.	Exercises with Use of different Apparatus and glasswares		<u>Higher Order Thinking Skills Based</u>	



	<ul style="list-style-type: none"> To compare the strengths of HCl and H₂SO₄ by studying the kinetics of hydrolysis of ethyl acetate. To study the distribution of iodine between water and CCl₄ 				Viva Voce	
MARCH- APRIL	<ul style="list-style-type: none"> To study the distribution of benzoic acid between benzene and water. To prepare arsenious sulphide sol and compare the precipitating power of mono-,bi- and trivalent anions. To determine the percentage composition of a given mixture (non interacting systems) by viscosity method. To determine the percentage composition of a given binary mixture by surface tension method (acetone & ethyl methyl ketone). 	Methods to determine percentage composition of binary mixture.	Exercises with Use of different Apparatus and glasswares.			


 PRINCIPAL
 SOPHIA GIRLS' COLLEGE
 (AUTONOMOUS)
 AJMER




 Head
 Department of Chemistry
 Sophia Girls' College
 (Autonomous), Ajmer



ORGANIC CHEMISTRY (PAPER II) (CHE-402)

SEM IV Month	UNIT/TOPIC	Concepts/facts	Teaching Pedagogy	Learning Outcomes	Questions	Marks Weightage (%)
SEM IV DECEMBER- JANUARY	Unit – I Aldehydes and Ketones Nomenclature and structure of carbonyl group. Synthesis of aldehydes and ketones from acid chlorides, 1,3-dithianes and carboxylic acid. Physical properties. Mechanism of nucleophilic additions to carbonyl group with particular emphasis on benzoin, aldol, Perkin and Knoevenagel condensations. Condensation with ammonia and its derivatives. Wittig reaction. Mannich reaction. Use of acetals as protecting group, Oxidation of aldehydes and ketones, Baeyer-villiger oxidation of ketones, Cannizzaro reaction, reductions of aldehydes and ketones, Halogenation of enolizable ketones.	Structure and reactivity of Aldehydes and ketones	PPT, Demonstration, Flipped Classroom, Group discussion	Illustrate the preparation and Chemical Reactions of Aldehydes and ketones	<u>Knowledge Based</u> -Write the structural formulas of 2-pentanone. -Write the structural formula of Picric acid? <u>Understanding Based</u> -Differentiate between primary, secondary and tertiary amines. -What are Phase Transfer Catalyst? <u>Higher Order Thinking Skills Based</u>	Knowledge--50 Understanding-35 Higher Order-15



FEBRUARY

Unit – II

Organic Compounds of Nitrogen

Preparation of nitroalkanes and nitroarenes. Chemical reactions of nitroalkanes, Mechanisms of nucleophilic substitution in nitroarenes and their reductions in acidic, neutral and alkaline media. Picric acid. Halonitroarenes: reactivity, Structure and nomenclature of amines, physical properties, Stereochemistry of amines, Amines salts as phase-transfer catalysts. Preparation of alkyl and aryl amines, Gabriel-phthalimide reaction, Hoffmann bromamide reaction. Reaction of amines, electrophilic aromatic substitution in aryl amines, Synthetic transformation of aryl diazonium salts, azo coupling.

Synthesis and reactivity of various N containing compounds

PPT, Quiz, Flipped Classroom

Summarize the reactivity of nitroalkanes, Amines, and diazonium salts.

-Differentiate between the reactivity of aldehydes and ketones.
-How we can separate the mixture of three types of amines.



**MARCH
-APRIL**

Unit – III

Carboxylic Acids

Nomenclature, structure and bonding, Preparation of carboxylic acids. Reactions of carboxylic acids. Hell-Volhard-Zelinsky reaction. Reduction of carboxylic acids. Mechanism of decarboxylation. Methods of formation and chemical reactions of halo acids. Hydroxy acids: malic, tartaric and citric acids, dicarboxylic acid.

Structure and reactivity
Of Carboxylic acids
and Hydroxy acids

Flow charts, PPT,
Demonstration,
Group discussion

To Compare the
reactivity of
carboxylic acids
and acid
derivatives.

Carboxylic Acid Derivatives -
Synthesis of acid chlorides, esters, anhydrides and amides. Relative stability of acyl derivatives, Physical properties, interconversion of acid derivatives, Mechanisms of esterification and hydrolysis (acidic and basic).

Synthesis and
interconversion of acid
derivatives

PPT, Quiz, Flow
Chart

S. Pearl

**PRINCIPAL
SOPHIA GIRLS' COLLEGE
(AUTONOMOUS)
AJMER**

S. Pearl

Tax

Head

**Department of Chemistry
Sophia Girls' College
(Autonomous), Ajmer**



SOPHIA GIRLS' COLLEGE, AJMER (AUTONOMOUS)
M.Sc. CHEMISTRY (PREVIOUS)
SEMESTER II

REACTION MECHANISM-II and STEREOCHEMISTRY (CHEM-202)

MAX MARKS: 100 (70EXT; 30 INT)

MIN. MARKS: 40(28 EXT;12 INT)

COURSE PLAN

SEM/ Month	Unit/Topic	Concepts/facts	Teaching Pedagogy	Learning Outcomes	Questions	Marks Weightage (%)
SEM II DECEMBER- JANUARY	UNIT I 1. Addition to Carbon-Hetero Multiple Bonds Mechanism of metal hydride reduction of saturated and unsaturated carbonyl compounds, acids and esters . Addition of Grignard reagents, organozinc and organolithium reagents to carbonyl and unsaturated carbonyl compounds. Wittig reaction. Mechanism of condensation reaction involving enolates-Aldol, Knoevenagel. Claisen, Mannich, Benzoin, Perkin	Addition reactions and Condensation reaction mechanism	Diagrams, Charts	Explain the mechanism of various types of condensation and elimination reactions.	<u>Knowledge Based</u> - Define plane of symmetry with examples. - What is Perkin reaction. Explain with mechanism. <u>Understanding Based</u> - Discuss Benzoin Reaction with	Knowledge-25 Understanding-45 Higher Order-30



	and Stobbe reactions. Hydrolysis of esters and amides.				mechanism.	
	2. Elimination reactions The E2, E1 and E1CB mechanism and their spectrum, Orientation of the double bond, reactivity effect of substrate structure, attacking base, leaving group and the medium, Mechanism and orientation in Pyrolytic elimination.	Mechanism of different types of Elimination reactions	3 D models, Charts		- Illustrate E1 Reaction Mechanism with example. <u>Higher Order Thinking Skills Based</u> - Discuss the mechanism of aldol and cross aldol condensation with mechanism. - Explain 1,3 dipolar cycloaddition and cheletropic reactions.	
FEBRUARY	UNIT II Stereochemistry Elements of symmetry, Chirality, molecules with more than one chiral center, threo and erythroisomers, methods of resolution, optical purity, enantiotopic and diastereotopic atoms, groups and faces, stereospecific and stereoselective synthesis. Asymmetric synthesis. Optical activity in the absence of chiral carbon (biphenyls, allenes and	Different stereochemical aspects of organic compounds	Diagrams, Demonstration	Analyse the stereochemistry of organic compounds.		




	<p>spiranes), chirality due to helical shape.</p> <p>Stereochemistry of the compounds containing nitrogen, sulphur and phosphorus.</p> <p>Conformational analysis of cycloalkanes and decalins, steric strain due to unavoidable crowding.</p>					
MARCH- APRIL	<p>Unit – III</p> <p>Pericyclic Reactions</p> <p>Molecular orbital symmetry, Frontier orbitals of ethylene, 1,3-butadiene, 1,3,5-hexatriene and allyl system.</p> <p>Classification of pericyclic reaction. Woodward-Hoffmann correlation diagrams. FMO and PMO approach Electrocyclic reactions- conrotatory and disrotatory motions, $4n$, $4n+2$ and allyl systems.</p> <p>Cycloadditions-antarafacial and suprafacial additions, $4n$, $4n+2$ systems, $2+2$</p>	<p>Concepts of Cycloaddition reactions and Sigmatropic rearrangements</p>	<p>Flipped Classrooms, Demonstration</p>	<p>Review the various aspects of pericyclic reactions</p>		



<p>addition of ketenes, 1,3 dipolar cycloaddition and cheletropic reactions. Sigmatropic rearrangements-suprafacial and antarafacial shifts of H, sigmatropic shifts involving carbon moieties, 3,3-and 5,5-sigmatropic rearrangements. Claisen, Cope and aza-Cope rearrangements, Ene reaction.</p>					
--	--	--	--	--	--


PRINCIPAL
SOPHIA GIRLS' COLLEGE
(AUTONOMOUS)
AJMER




Head
Department of Chemistry
Sophia Girls' College
(Autonomous), Ajmer



SOPHIA GIRLS' COLLEGE, AJMER (*AUTONOMOUS*)
M.SC CHEMISTRY (FINAL)
GROUP-B ORGANIC CHEMISTRY
SEMESTER IV

HETEROCYCLIC CHEMISTRY - CHEM-401(B)

MAX MARKS: 100 (70EXT; 30 INT)

MIN. MARKS: 40 (28 EXT;12 INT)

COURSE PLAN

SEM/ Month	UNIT/TOPIC	Concepts/facts	Teaching Pedagogy	Learning Outcomes	Questions	Marks Weightage (%)
SEM IV DECEMBER- JANUARY	Unit-I Nomenclature of Heterocycles Replacement and systematic nomenclature (Hantzsch-Widman system) for monocyclic, fused and bridged heterocycles.	Structural Classification and nomenclature of heterocycles.	Diagrams, Quiz	Interpret aromatic and non- aromatic heterocycles	<u>Knowledge Based</u> -What is Hockey stick effect?. - Give two synthesis of Oxirane. <u>Understanding Based</u> - Explain briefly the structure and reactions of Quinolizinium salts. - Discuss attractive	Knowledge-25 Understanding-45 Higher Order-30



Aromatic Heterocycles

General chemical behavior of aromatic heterocycles, classification (structural type), criteria of aromaticity (Bond lengths, ring current and chemical shifts in ^1H NMR-spectra, empirical resonance energy, delocalization energy and Dewar resonance energy, diamagnetic susceptibility exaltations.)

Heteroaromatic reactivity and tautomerism in aromatic heterocycles.

Non Aromatic Heterocycles

Strain-bond angle and torsional strains and their consequences in small ring heterocycles. Conformation of six-membered heterocycles with reference to molecular geometry, barrier to ring inversion, pyramidal inversion and 1,3-diaxial interaction.

Stereo-electronic effects-

General chemical behaviours of aromatic heterocycles and non aromatic heterocycles

Charts, PPT


Diagrams, charts

interactions through space

Higher Order Thinking Skills Based

- Illustrate torsional strain and their consequences in small ring heterocycles

- Describe Meso-Ionic heterocycles.

	<p>anomeric and related effects. Attractive interactions- hydrogen bonding and intramolecular nucleophilic- electrophilic interactions.</p>						
<p>FEBRUARY</p>	<p>Unit-II Heterocyclic Synthesis Principles of heterocyclic synthesis involving cyclization reaction and cycloaddition reactions.</p>	<p>Reactions and synthesis of small ring and six membered heterocycles.</p>	<p>Quiz, PPT, Flow charts</p>	<p>Elaborate the synthesis of various types of heterocyclic compounds.</p>			
	<p>Small Ring Heterocycles Three - membered and four - membered heterocycles - synthesis and reactions of aziridines, oxiranes, azetidines, oxetanes.</p>		<p>Demonstration</p>				
	<p>Heterocyclic Systems containing P- Heterocyclic ring containing phosphorus: Introduction, nomenclature, synthesis and characteristics of 5-and 6 membered ring systems-phosphorinanes, phospholanes and phospholes.</p>		<p>Charts, Diagrams</p>				



Six Membered Heterocycles with one Heteroatom
Synthesis and reaction of quinolizinium and benzopyrilium salts, coumarins and chromones.

Tables, charts

MARCH-APRIL

Unit-III

Benzo Fused Five-membered Heterocycles

Synthesis and reactions including medicinal applications of benzopyrroles, benzofurans and benzothiophenes. Meso-Ionic heterocycles.

Applications and reactions of benzo fused heterocycles

Diagrams, Flow charts

Illustrate benzo fused five-membered and six-membered heterocycles.

Sr Pearl
PRINCIPAL
SOPHIA GIRLS' COLLEGE
(AUTONOMOUS)
AJMER

Shw

Tar
Head
Department of Chemistry
Sophia Girls' College
(Autonomous), Ajmer



	Six-Membered heterocycles with Two or More Heteroatoms Synthesis and reactions of tetrazines and thiazines	Characteristics of Six-Membered heterocycles with Two or More Heteroatoms	Flipped classrooms, Diagrams			
--	--	---	------------------------------	--	--	--

Sr. Pankaj

PRINCIPAL
SOPHIA GIRLS' COLLEGE
(AUTONOMOUS)
AJMER

Sun

Tar

Head
Department of Chemistry
Sophia Girls' College
(Autonomous), Ajmer



MSc (CHEMISTRY) Final
Elective (Organic and Inorganic)

Semester IV
ANALYTICAL CHEMISTRY CHEM 404 (A,B)

FEBRUARY	Unit-II Thermal methods of analysis Thermogravimetric analysis – Introduction, instrumentation, TG – curves, factors affecting TGA, application of TGA	Instrumentation and applications of thermogravimetri c and thermometric analysis.	Diagrams, Charts	Apply various methods of thermal analysis	<u>Understanding Based</u> -Explain ANOVA. - Discuss the factors affecting column efficiency and applications of Column Chromatography.
	Differential thermal analysis - Differential scanning calorimetry, instrumentation, Factors affecting DTA and DSC curves.		Tables, Diagrams		
	Thermometric titrations Introduction, instrumentation, Applications		Flipped Classrooms		

Sr. Pearl
PRINCIPAL
SOPHIA GIRLS' COLLEGE
(AUTONOMOUS)
AJMER

SPC

Tar
Head
Department of Chemistry
Sophia Girls' College
(Autonomous), Ajmer