CLASS/PERIOD	9:00-9:45 I	9:45-10:30 II	10:30-11:15 III	11:15-12:00 IV	12:00-12:45 V	12:45-1:30 VI	1:30-2:15 VII	2:15-3:00 VIII	3:00-3:45 IX
B.SC 2ND	←	B.SC 2 PR.(MED.,NON MED.)	→	B.SC 2 TH. **SECB**(5B) (1,2)SEEMA (3,4)SHAMMY LAJ (5,6)SEEMA **SEC C(2C)** (1,2) MONIKA (3) SUMAN (4) SEEMA (5,6) SHAMMY LAJ **SEC A(12C)** (1,2) SUMAN (3,4)MEENA (5,6)NIDHI			B.SC 2 TH.(2C) **SEC B** (3,4)MEENA **SEC A** (5,6)SHAMMY LAJ		
CLASS/PERIOD	9:00-9:45 I	9:45-10:30 II	10:30-11:15 III	11:15-12:00 IV	12:00-12:45	12:45-1:30 VI	1:30-2:15 VII	2:15-3:00 VIII	3:00-3:45 IX

					V				
B.SC 3RD	**SEC B** VIJAITA (1-3)12C SUMAN (4-6)12C **SEC A**(1,2)DEEPAK2C (3,4) POOJA RANI 2C (5,6)MANU 2C	**SEC A**(5B)(5) ANITA SINGHAL **SECC**(3B)(1,2)DEEPAK (5B)(3,4) ANITA SINGHAL (2C)(5,6) POOJA RANI **SEC D** (5B)(1)VIJAITA (2)(5B)ANITA SINGHAL (3,4)2C POOJA RANI (3B)(5,6) DEEPAK **B.Sc 3rdMed**.SEC A Biochem(6)(5B)AARTI **B.Sc 3rdMed**.SEC B Biochem(6)(51B) MEENA **B.Sc 3rdH.Sc** Biochem TH.(12C) (4)AARTI (5,6)MONIKA		←	B.SC 3 PR. MED,NON-MED.	→	**SEC B** AARTI (1,2)2C	B.Sc 3rdH.Sc PR.(4-6)3C DR.ANITA, MONIKA	

CLASS/PERIOD	9:00-10:00 I	10:00-11:00 II	11:00-12:00 III	12:00-1:00 IV	1:00-2:00 V	2:00-3:00 VI	3:00-4:00 VII

B.SC 1			**MEDICAL** SKILL PRACTICAL (5,6) (3C)SANGITA,PREETI (5C)SUMAN,MONIKA,AARTI,SEEMA (6B)MEENA	**MAJOR(NON MED.)** **(1-2)** SEC D(33B)VIJAITA **MAJOR(MED.)** **(1-**2) SEC A (2C)NIDHI SEC B (21B)SANGITA SEC C (29B)PREETI **MINOR CHEM**.(5,6)PHY.HONS. SEC A SANGITA(32B) **SKILL(NM)(**5-6) PREETI(33B) SECB	**SKILL(MED.)** (1-2)MANU (33B) (5,6) **NON. MEDICAL** SKILL PRACTICAL (5C)AARTI,SUMAN (6B)SEEMA,VIJAITA	PRACTICALS B.SC MED,N.MED(MAJOR),MINOR ←	→

TIME TABLE (CHEMISTRY DEPARTMENT)2024-25(EVEN SEM)JAN. 2025

B.SC 3rd										
NAME/PERIOD (TEACHER ID)	9:00-9:45 I	9:45-10:30 II	10:30-11:15 III	11:15-12:00 IV	12:00-12:45 V	12:45-1:30 VI	1:30-2:15 VII	2:15-3:00 VIII	3:00-3:45 IX	SIGNATURE
MS.ANITA SINGHAL (11947)		**B.Sc3rdTH Inorg.(TH)** (3,4)**C**(5B) (2)**D**(5B) (5)**A**(5B)		←	B.Sc 3rdPr. LAB 3C (1-6)	→		B.Sc 3rdH.ScBio-chem PrLAB3C (4-6) TIME=2-4 B.SC 1 PR. MAJOR(3)LAB 3C		
MR. DEEPAK SANGWAN (12199)	BSC 3rdTH.SEC A(1,2)2C ←	**B.Sc3rd(TH)** (1,2)**C**(3B) (5,6)**D**(3B) B.Sc 2ndPr(3)LAB 3C	→	←	B.Sc 3rdPr. LAB 7B (1-6)	→				
MS.POOJA RANI (E-2994)	BSC 3rdTH.SEC A(3,4)2C ←	**B.Sc3rdTH.** (3,4)**D**(2C) (5,6)**C**(2C) B.Sc2ndPr (1,2)LAB 5C	→	←	B.Sc 3rdPr. LAB 5C (1,2,3,5,6)	→				

MS.AARTI		B.Sc 2nd PrLAB 3C (1,2) (5)7B B.Sc H.Sc 3rd TH.(4)12C B.Sc3rd SEC A .Biochem. TH.(6)5B		(11:00-12:00) SKILL PR.MED.(5) LAB 5C	B.Sc 3rd Pr. LAB 6B(1,2)		Time=1-2 **SKILL PR**.(5) NON.MED5 C **B.Sc 3rd TH**. SEC B(1,2)2C	TIME=2-4 B.SC 1 PR. MINOR(3,4PHY. HONS		
MS.SEEMA (E-3017)	B.Sc 2nd Pr LAB 3C(3,4)(5,6) LAB 5C(1)			**B.Sc2nd TH .**(1,2)**B**(5B) (4) **C**(2C) (5,6)B(5B) SKILL PR.MED.(6) LAB 5C		**SKILL NON.MED.** PR.(5)6B		TIME=2-4 B.SC 1 PR. MAJOR(1-2) LAB 7B		
MS.MONIKA (E-3043)		B.Sc 2nd Pr. LAB 5C (4) B.Sc H.Sc 3rd TH.(5,6)12 C		**B.Sc2nd TH** (1,2)SEC **C(2C)** SKILL PR.MED.(5, 6)LAB 5C	B.Sc 3rd Pr.(3,4) LAB 6B			TIME=2-4 B.SC 1 PR. (1,2)MAJ OR MED. (3)MAJO R MED.3C B.Sc 3rd H.ScBi o-chem PrLAB3C (4-6)		

MS.SUMAN (E-	**B.Sc3rdTH.** (4-6)12C SEC B	B.Sc 2nd Pr. LAB 6B (1,2) (3)5C		**B.Sc2ndTH** (1,2)SEC A(12C) SEC C(3)2C LAB 5C SKILL PR.MED.(5, 6)	B.Sc 3rd Pr. LAB5C(4)	Time=1-2 **SKILL NON.MED.** PR.(6)5C		TIME=2-4 LAB 7B (3,4)MIN OR PH.HONS		
MS.SHAMMY LAJ (		B.Sc 2nd Pr. LAB 7B (1-4,6)		**B.Sc2ndTH.** (5,6)**C**(2C) (3,4)B(5B)	B.Sc 3rd Pr.LAB 5C(1,2)		**B.Sc2ndTH.** (5,6)**A**(2C)			

TIME	9-10 I	10-11 II	11-12 III	12-1 IV	1-2 V	2-3 VI	3-4 VII	
MS.MANU (E-3031)	**BSC 3rdTH**.SEC A(5,6)2C			B.Sc 3rd Pr. LAB 6B(5,6) (3,4)3C	**B.SC 1 TH.**SKILL(MED.)(1,2) SEC A 33B	B.SC 1 PR. LAB 6B MAJOR(2)5C (3-4)7B,(5)6BMAJOR MED.		
MS.PREETI (E-3050)	B.Sc 2nd PrLAB 5C(3,4)TIME=9:00-11:15		SKILL PR.MED.(5,6)LAB 3C	MAJOR(MED.)(1-2)SEC C(29B) B.SC 1 YR.SKILL (33B)TH.(5-6)SEC B		B.SC 1 PR. LAB 3C MAJOR MED.(1,2) (4)MAJOR NON.MED. (5,6)MAJORMED.		

MS.VIJAITA (E- **)**	**B.Sc3rdTH.** (1-3)12C SEC B	**B.Sc3rdTH.** SEC D(1)5B	←	MAJOR(NON.MED.) (1-2)SEC D(33B) B.Sc 3rdPr. LAB 5C(3,4)	SKILL PR.NON MED.(5)LAB 6B →	B.SC 1 PR. MAJOR MED.(1) (3,4)MAJOR MED. (5,6)MAJOR MED. LAB 5C ←	→	
MS.NIDHI **(E-)**	B.Sc 2ndPr LAB 6B(3-6) LAB 5C (2) ~~TIME=9:00-11:15~~	→	**B.Sc2ndTH .** (5,6)**A**(12C)	**MAJOR(MED.)** **(1-2)SEC A(2C)**		B.SC 1 PR. MAJORN.M.(1,2) MAJOR MED.(4) LAB 7B ←	→	
MS.MEENA **(E-3038)**	**B.Sc2nd**Pr(4)LAB 3C	→ B.Sc3rd SEC B Biochem. TH.(6)(9:45-10:30)(51B)	**B.Sc2ndTH(11:15-12:00)** **SEC A(3,4)(12C)** SKILL PR.MED.(5,6)LAB 6B	B.Sc 3rdPr. LAB 6B(1,2)	→	B.SC 1 PR. MAJOR N.M.(1,2)5C (5,6)MAJOR MED.7B LAB 5C TIME=1:30-2:15 **B.Sc2ndTH.** (3,4)**SEC B**(2C)		
MS.SANGEETA **(E-3852)**	B.Sc 2ndPr(5,6)LAB 5C TIME=9:00-11:15 ←	→	SKILL PR.MED.(5,6)LAB 3C	**MAJOR(MED.)** **(1-2)SEC B(21B)** **B.SC 1 TH.MINOR CHEM.(5,6)SEC A(32B)**		B.SC 1 PR. MAJOR(1-2)N.M. (3,4)MAJOR NON MED. (6)MAJOR MED. LAB 6B		

LESSON PLAN

Name of the teacher:Dr. Nidhi Dhull

Class and Section: B. Sc. IISection A and B.Sc. Ist sec A

Subject: Organic and Physical and inorganic Chemistry

January 2025

First week:

winter holidays

Second week

BSc II Unit 2 Amines: Structure and nomenclature of amines, physical properties. Separation of a mixture of primary, secondary and tertiary amines.Structural features affecting basicity of amines.

Third week:

BSc II: Preparation of alkyl and aryl amines (reduction of nitro compounds, nitriles, reductive amination of aldehydic and ketonic compounds. Gabrielphthalimide reaction,

Fourth week:

BSc II:Hofmann bromamide reaction. electrophilic aromatic substitution in aryl amines, reactions of amines with nitrous acid.

February 2025

First week

BSc II**:**. Diazonium Salts Mechanism of diazotisation, structure of benzene diazonium chloride, Replacement of diazo group by H, OH, F, Cl, Br, I, NO_2 and CN groups

Second week

BScII: reduction of diazonium salts to hyrazines, coupling reaction and its synthetic application

BSc 1stUnit 1 Non-aqueous Solvents Physical properties of a solvent, types of solvents and their general characteristics, solvent system concept, reactions in non-aqueous solvents with reference to liquid NH3 and liquid SO2

Third week

BSc II: Nitro Compounds Preparation of nitro alkanes and nitro arenes and their chemical reactions

BSc 1st Hard and soft acids and bases (HSAB concept), applications of HSAB principle. Noble Gases 27 Occurrence and uses,

Fourth week

BScII: Mechanism of electrophilic substitution reactions in nitro arenes and their reductions in acidic, neutral and alkaline medium

BSc **1st**rationalization of inertness of noble gases, clathrates, preparation and properties, chemical properties of the noble gases,

March 2025

First week

BSc II: . Aldehydes and Ketones Nomenclature and structure of the carbonyl group. Synthesis of aldehydes and ketones with particular reference to the synthesis of aldehydes from acid chlorides

BSc 1st chemistry of xenon: structure and bonding in xenon fluorides, oxides and oxyfluorides (XeF2, XeF4, XeF6, XeO3, XeO4, XeOF2, XeO2F2, XeOF4, XeF5 + , XeF5

Third week

BSc II: advantage of oxidation of alcohols with chromium trioxide (Sarett reagent) pyridinium chlorochromate (PCC) and pyridinium dichromate., Physical properties

Test & Assignment of UNIT 2

BSc 1st nature of bonding in noble gas compounds (valence bond treatment and MO treatment for XeF2 and XeF4), molecular shapes of noble gas compounds (VSEPR theory).

Fourth week

BSc II: . Comparison of reactivities of aldehydes and ketones. Mechanism of nucleophilic additions to carbonyl group with particular emphasis on benzoin, aldol

BSc 1stUnit–II Thermodynamics Brief discussion upto first law of thermodynamics, heat capacity, heat capacities at constant volume and pressure and their relationship

April 2025

First week

BSc II: , Perkin and Knoevenagel condensations. Condensation with ammonia and its derivatives. Wittig reaction

Sessional test of both classes

BSc 1st Joule's law, Joule–Thomson coefficient for ideal gases and real gases and inversion temperature, calculation of work and heat, dU&dH for the expansion of ideal gases and real gases under isothermal and adiabatic conditions for reversible and irreversible processes,

Second week

BSc II: .Mannichreaction.Oxidation of aldehydes, Baeyer–Villiger oxidation of ketones,

BSc 1st . enthalpy and internal energy change at constant P, V &T, Kirchhoff's equation. Second law of thermodynamics and its limitations

Third week

BSc II: Cannizzaro reaction. MPV, Clemmensen, Wolff-Kishner,LiAlH4 and NaBH4 reductions

BSc 1st different statements of the law, Carnot's cycle and its efficiency, Carnot's theorem, thermodynamics scale of temperature. Concept of entropy– entropy as a state function, entropy change in ideal gases, entropy as a function of V & T

Fourth week

BSc II: Problem Discussion & Assignment with viva

BSc 1st entropy as a function of P & T, entropy as a function of P & V, entropy as a criterion of spontaneity and equilibrium. Unit–III Hydrocarbons Alkanes: Physical and chemical properties of alkanes, free radical substitutions, halogenation, concept of relative reactivity v/s selectivity

May 2025

First week

BSc 1st ,. Alkenes: Structure and isomerism, general methods of preparation, physical and chemical properties. Mechanism of E1, E2, E1cb reactions, Saytzeff and Hoffmann elimination, electrophilic addition (mechanism with suitable examples)

Second week

BSc 1st Markownikoff rule, syn and anti-addition, addition of H2, X2 oxymercuration-demercuration, hydroboration- oxidation, ozonolysis, hydroxylation. Alkynes: General methods of preparation, reactions of alkynes: acidity, electrophilic and nucleophilic additions, hydration to form carbonyl compounds, alkylation of terminal alkynes.

Third week

Unit–IV Aromatic Hydrocarbons and Dienes Concept of aromaticity, Huckel's rule, aromatic character of arenes, cyclic carbocations and carbanions with suitable examples and heterocyclic compounds with suitable examples, electrophilic aromatic substitution: halogenation, nitration, sulphonation, Friedel Crafts alkylation/ acylation with their mechanism, directing effects of groups in electrophilic substitution

Fourth week

nomenclature and classification of dienes: isolated, conjugated and cumulated dienes. Structure of butadiene, chemical reactions- 1, 2 and 1, 4 additions (electrophilic and free radical mechanism), Diels – Alder reaction

Government College for Women, Rohtak

Department of Chemistry

Lesson Plan, Even Semester (Session 2024-25)

Name of Teacher: **Shammy Laj**

B.Sc.4th Sem (Med.) Sec – A

B.Sc.4th Sem (Med.)Sec – B

B.Sc.4th Sem(Non-Med) Sec-C

Subject - **Organic and Inorganic**

(Teaching Term-7thJan- 30thApril, 2025)

JANUARY,2025

Week 2:

SEC A Theory of Qualitative and Quantitative Inorganic Analysis-I

Chemistry of analysis of various acidic radicals

SEC B Theory of Qualitative and Quantitative Inorganic Analysis-I

Chemistry of analysis of various acidic radicals

SEC C Lanthanides

Electronic structure, oxidation states and ionic radii

Week 3

SEC A Chemistry of identification of acid radicals in typical combinations

SEC B Chemistry of identification of acid radicals in typical combinations

SEC C lanthanide contraction, complex formation, occurrence and isolation

Week 4

SEC A. REVISION OF UNIT 3
SEC B REVISION OF UNIT 3
SEC C REVISION OF LANTHENIDES

FEBRUARY
Week 1
SEC A Theory of Qualitative and Quantitative Inorganic Analysis-II
Chemistry of analysis of various groups of basic radicals,
SEC B Theory of Qualitative and Quantitative Inorganic Analysis-II
Chemistry of analysis of various groups of basic radicals,
SEC C Actinides: General features and chemistry of actinides
Week 2
SEC A Theory of precipitation, co- precipitation, Post- precipitation,
SEC B Theory of precipitation, co- precipitation, Post- precipitation,
SEC C chemistry of separation of Np, Pu and Am from U
Week 3
SEC A purification of precipitates. REVISION OF UNIT 4
SEC B purification of precipitates. REVISION OF UNIT 4
SEC C Comparison of properties of Lanthanides and Actinides and with trans ition elements .TEST OF ACTINIDES
Week 4
SEC A Molecular vibrations, Hooke's law, selection rules
SEC B Molecular vibrations, Hooke's law, selection rules
SEC C Theory of Qualitative and Quantitative Inorganic Analysis-I
Chemistry of analysis of various acidic radicals

MARCH , 2025 (9^{th} -16^{th} Holi Vacation)

Week 1
SEC A intensity and position of IR bands, measurement of IR spectrum
SEC B intensity and position of IR bands, measurement of IR spectrum
SEC C Chemistry of identification of acid radicals in typical combinations

Week 2 HOLI VACATIONS

Week 3

SEC A measurement of IR spectrum, fingerprint region, characteristic absorptions of various functional groups
SEC B measurement of IR spectrum, fingerprint region, characteristic absorptions of various functional groups
SEC C Chemistry of interference of acid radicals including their removal in the analys is of basic radicals.
Week 4
SEC A interpretation of IR spectra of simple organic compounds.
SEC B interpretation of IR spectra of simple organic compounds.
SEC C Theory of Qualitative and Quantitative Inorganic Analysis-II
Chemistry of analysis of various groups of basic radicals,

APRIL

Week 1
SEC A Applications of IR spectroscopy in structure elucidation of simple organic compounds.

SEC B Applications of IR spectroscopy in structure elucidation of simple organic

compounds.

SEC C Theory of precipitation, co- precipitation, Post- precipitation,

Week 2
SEC A TEST OF ORGANIC UNIT 1
SEC B TEST OF ORGANIC UNIT 1
SEC C purification of precipitates. REVISION OF UNIT 4
Week 3
SEC A REVISION OF WHOLE SYLLABUS
SEC B REVISION OF WHOLE SYLLABUS
SEC C REVISION OF FIRST THREE UNITS
Week 4
SEC A TEST AND ASSIGNMENT
SEC B TEST AND ASSIGNMENT
SEC C TEST OF FULL SYLLABUS AND ASSIGNMENT

Government College for Women, Rohtak
Department of Chemistry
Lesson Plan, Even Semester (Session 2024-25)
Name of Extension Lecturer: **MONIKA (E-3043)**
B.Sc.4TH Sem (Med.) Sec C(Organic chemistry)

B.Sc.6th Sem (HomeSci Biochemistry)
Subject - **Organic and Bio-Chemistry**

(Teaching Term-7thJan- 30thApril, 2025)

January, 2025

Second Week --

B.Sc.4TH Sem :**. Infrared (IR) absorption spectroscopy**

Molecular vibrations, Hooke's law, selection rules,

B. Sc.H.Sc.-Biochem3rd:Nucleic acids,types,composition,replication

Third Week --

B.Sc.4TH Sem :intensity and position of IR bands,

B.Sc.H.Sc.-Biochem3rd:transcription,genetic code

Fourth Week –

.B.Sc.4TH Sem :measurement of IR spectrum, fingerprint region, characteristic absorption's of various functional groups and interpretation of IR spectra of simple organic compounds.

B.Sc.H.Sc.-Biochem3rd:,structure of DNA& RNA

.

February, 2025

First Week –

B.Sc.4THSem :Applications of IR spectroscopy in structure elucidation of simple organic

compounds.

B.Sc.H.Sc.-Biochem3rd:LIPIDS:definition,classification

Second Week –

B.Sc.4THSem :**. Amines**

Structure and nomenclature of amines, physical properties.

B.Sc.H.Sc.-Biochem3rd:properties of fatty acids

Third Week –

B.Sc.4THSem :Separation of a mixture

of primary, secondary and tertiary amines.Structural featu res affecting basicity of amines

B.Sc.H.Sc.-Biochem3rd:acid value,iodine value,saponification value

Fourth Week –

B.Sc.4THSem :repa ration of alkyl and aryl amines (reduction of nitro compounds, nitriles,

reductive amination of aldehydic and ketonic compounds.

B.Sc.H.Sc.-Biochem3rd:Rivision and Test of nucleic acids

March, 2025 (9th -16th Holi Vacation)

First Week –

B.Sc.4THSem :Gabrielphthalimide

reaction, Hofmann bromamide reaction. electrophilic aromatic substitution in aryl

amines, reactions of amines with nitrous acid

B.Sc.H.Sc.-Biochem3rd:beta oxidation of lipids

Second Week -- Holi Vacation

Third Week --

B.Sc.4THSem :Mechanism of diazotisation, structure of benzene diazonium chloride, Replacement of

diazo group by H, OH, F, Cl, Br, I, NO

2

and CN groups, reduction of diazonium salts

to hyrazines, coupling reaction and its synthetic application.

B.Sc.H.Sc.-Biochem3rd:biosynthesis of fatty acids

Fourth Week –

B.Sc.4THSem :**Nitro Compounds**

Preparation of nitro alkanes and nitro arenes and their chemical reactions. Mechanism of electrophilic substitution reactions in nitro arenes and their reductions in acidic, neutral and alkaline medium.

B.Sc.H.Sc.-Biochem3rd:ketone body formation

April, 2025

First Week –

B.Sc.4THSem :Nomenclature and structure of the carbonyl group. Synthesis of aldehydes and ketones with particular reference to the synthesis of aldehydes from acid chlorides, advantage of oxidation of alcohols with chromium trioxide (Sarett reagent) pyridinium chlorochromate (PCC) and pyridinium dichromate.

B.Sc.H.Sc.-Biochem3rd:ketosis,fatty livers

Second Week –

B.Sc.4THSem :Physical properties. Comparison of reactivities of aldehydes and ketones. 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

B.Sc.H.Sc.-Biochem3rd:biological oxidation of lipids

B

Third Week --

B.Sc.4THSem :.Oxidation of aldehydes, Baeyer– Villiger oxidation of ketones, Cannizzaro reaction. MPV, Clemmensen, Wolff-Kishner, $LiAlH_4$ and $NaBH_4$ reductions.

B.Sc.H.Sc.-Biochem3rd:TCA cycle,E.T.C Oxadative phosphorylation theories

Fourth Week –

B.Sc.4THSem :Test and Viva
B.Sc.H.Sc.-Biochem3rd:Rivision and test

Government College for Women, Rohtak
Department of Chemistry
Lesson Plan, Even Semester (Session 2024-25)
Name of Extension Lecturer: POOJA RANI
B.Sc.6th Sem Sec – A,C,D

Subject -**Physical Chemistry**

(Teaching Term-7thJan- 30thApril, 2025)

January, 2025

Second Week -- Electronic Spectrum

Concept of potential energy curves for bonding and antibonding molecular

orbitals

Third Week -- qualitative description of selection rules and Franck- Condon principle.

Fourth Week – Qualitative description of sigma and pie and n molecular orbital (MO) their energy

level and respective transitions.

February, 2025

First Week –Photochemistry

Interaction of radiation with matter, difference between thermal and photochemical processes.

Second Week – Laws of photochemistry: Grotthus-Drapper law, Stark- Einstein law (law of photochemical equivalence) Jablonski diagram depiciting various processes occurring in the excited state,

Third Week – qualitative description of fluorescence, phosphorescence, non-radiative processes (internal conversion, intersystem crossing), quantum yield, photosensitized reactions-energy transfer processes (simple examples).

S

Fourth Week –Solutions:

Dilute Solutions and Colligative Properties

Ideal and non-ideal solutions, methods of expressing concentrations of solutions, activity and activity coefficient.

March, 2025 (9^{th} -16^{th} Holi Vacation)

First Week –Dilute solution,Colligative properties, Raolut's law, relative lowering of vapour pressure, molelcular weight determination, Osmosis law of osmotic pressure and its measurement,

Second Week -- Holi Vacation

Third Week --determination of molecular weight from osmotic pressure. Elevation of boiling point and depression of freezing point, Thermodynamic derivation of relation between molecular weight and elevation in boiling point and depression in freezing point

Fourth Week – Experimental methods for determining various colligative properties. Abnormal molar mass, degree of dissociation and association of solutes.

April, 2025

First Week – **Phase Equillibrium**

Statement and meaning of the terms – phase component and degree of freedom

Second Week – thermodynamic derivation of Gibbs phase rule, phase equilibria of one component system – Example – water and Sulpher systems.

Third Week --Phase equilibria of two component systems solid-liquid equilibria, simple eutectic

Example Pb-Ag system, desilerisation of lead

Fourth Week – Revision and test

Test and assignment submission

Government College for Women, Rohtak
Department of Chemistry
Lesson Plan, Even Semester (Session 2024-25)
Name of Assisstant professor:Dr. Deepak
B.Sc.6th Sem Sec – A,C,D

Subject -**Physical Chemistry**

(Teaching Term-7thJan- 30thApril, 2025)

January, 2025

Second Week:**Heterocyclic Compounds-I**

Introduction: Molecular orbital picture and aromatic characteristics of pyrrole, furan,

thiophene and pyridine.

Third Week -Methods of synthesis and chemical reactions with particular emphasis on the mechanism of electrophilic substitution.

Fourth Week-Mechanism of nucleophilic substitution reactions in pyridine derivatives. Comparison of basicity of pyridine, piperidine and pyrrole

February, 2025

First Week: **Hetero cyclic Compounds-II**

Introduction to condensed five and six- membered heterocycles. Prepration and reactions of indole, quinoline and isoquinoline with special reference to Fisher indole synthesis,

Second Week – Skraup synthesis and Bischler-Napieralski synthesis. Mechanism of electrophilic substitution reactions of, quinoline and isoquinoline

Third Week-Organosulphur Compounds

Nomenclature, structural features, Methods of formation and chemical reactions of thiols, thioethers,

Fourth Week –sulphonic acids, sulphonamides and

sulphaguanidine. Synthetic detergents alkyl and aryl sulphonates.

March, 2025 (9th -16th Holi Vacation)

First Week –**Organic Synthesis *via* Enolates**

Acidity of alpha-hydrogen, alkylation of diethyl malonate and ethyl acetoacetate.

Synthesis of ethyl acetoacetate: the Claisen condensation. Keto-enol tautomerism of

ethyl acetoacetate.

Second Week -- Holi Vacation

Third Week -Synthetic Polymers

Addition or chain-growth polymerization. Free radical vinyl polymerization, ionic

vinyl polymerization, Ziegler-Natta polymerization and vinyl polymers.

Fourth Week – Condensation or step growth polymerization. Polyesters ,polyamides, phenol

formaldehyde resins, urea formaldehyde resins, epoxy re sins and polyurethanes.

Natural and synthetic rubbers.

April, 2025

First Week-Amino Acids, Peptides& Proteins

Classification, of amino acids. Acid-base behavior, isoelectric point and electrophoresis.

Second Week – Preparation of -amino acids.Structure and nomenclature of peptides and proteins. Classification of proteins. Peptide structure determination, end group analysis, selective hydrolysis of peptides.

Third Week-Classical peptide synthesis, solid–phase peptide synthesis. Structures of peptides and proteins: Primary & Secondary structure.

Fourth Week – Revision and
Test and assignment submission

Government College for Women, Rohtak
Department of Chemistry
Lesson Plan, Even Semester (Session 2024-25)
Name of Extension Lecturer: **Dr. Aarti Dalal (3024)**
B.Sc.6th Sem (Med.) Sec – B
B.Sc.6th Sem (Med. Biochem) Sec – A
B.Sc.6th Sem (HomeSci Biochem)
Subject - **Organic and Bio-Chemistry**

(Teaching Term-7thJan- 30thApril, 2025)

January, 2025

Second Week --

BSc.(Med) 3rd: Organic synthesis via Enolates, Acidity of alpha hydrogen.

B.Sc.H.Sc.-Biochem3rd: Introduction of Proteins.

B.Sc.Med-Biochem3rd:Lipid Metabolsim Introduction

Third Week --

BSc.(Med) 3rd: Alkylation of diethyl malonate and ethyl acetoacetate.

B.Sc.H.Sc.-Biochem3rd:Elementary Knowledge of Proteins.

Sc.Med-Biochem3rd: Structure and function of lipids.

Fourth Week –

BSc.(Med) 3rd: BSc.(Med) 3rd: Synthesis of ethyl acetoacetate , the claisen condensation. .

B.Sc.H.Sc.-Biochem3rd:Elementary Knowledge of Biosynthesis of Proteins.

B.Sc.Med-Biochem3rd:Fatty acid Biosynthesis

February, 2025

First Week –

BSc.(Med) 3rd: Keto enol tatutomerism of ethylacetoacetate.

B.Sc.H.Sc.-Biochem3rd: Introduction of nucleic acids.

B.Sc.Med-Biochem3rd:Beta oxidation

Second Week –

BSc.(Med) 3rd: Introduction of Polymer, Addition or chain-growth polymerization.

B.Sc.H.Sc.-Biochem3rd:Biological Oxidation

B.Sc.Med-Biochem3rd:Saturated and unsaturated Fatty acids

Third Week –

BSc.(Med) 3rd: Free radical vinyl polymerization, ionic vinyl polymerization,

B.Sc.H.Sc.-Biochem3rd:TCA cycle

B.Sc.Med-Biochem3rd:Storage of Fatty acids

Fourth Week –

BSc.(Med) 3rd: Ziegler-Natta polymerization and vinyl polymers.

B.Sc.H.Sc.-Biochem3rd:Rivision and Test Biological oxidation

B.Sc.Med-Biochem3rd:Mobilizationof Fatty acids

March, 2025 (9th -16th Holi Vacation)

First Week –

BSc.(Med) 3rd: Condensation or step growth polymerization.

B.Sc.H.Sc.-Biochem3rd:Oxidative Phosphorylation Theories

B.Sc.Med-Biochem3rd:Nitrogen Metabolism

Second Week -- Holi Vacation

Third Week --

BSc.(Med) 3rd: Assingement Submission

B.Sc.H.Sc.-Biochem3rd:Oxidative Phosphorylation Theories

B.Sc.Med-Biochem3rd:Biology of nitrogen fixation

Fourth Week –

BSc.(Med) 3rd: Rivision and Test

B.Sc.H.Sc.-Biochem3rd:Oxidative Phosphorylation Theories

B.Sc.Med-Biochem3rd:Introduction of Nitrate reductase

April, 2025

First Week –

BSc.(Med) 3rd: Epoxy re sins and polyurethanes.

B.Sc.H.Sc.-Biochem3rd:Rivision of Oxidative Phosphorylation Theories

B.Sc.Med-Biochem3rd:Importance of Nitrate reductase

Second Week –

BSc.(Med) 3rd: Natural and synthetic rubbers.

B.Sc.H.Sc.-Biochem3rd:Group Discussion

B.Sc.Med-Biochem3rd:Regulation of Nitrate reductase

Third Week --

BSc.(Med) 3rd: Revision**&** Group discussion.

B.Sc.H.Sc.-Biochem3rd:Assingment Submission

B.Sc.Med-Biochem3rd:Ammonium Assimilation

Fourth Week –

BSc.(Med) 3rd: Test and Viva

B.Sc.H.Sc.-Biochem3rd:Rivision and test

B.Sc.Med-Biochem3rd: Test and assignment submission

Govt. Post Graduate College For Women, Rohtak

Dept. of Chemistry Lesson Plan Even Sem

Name of Faculty- Dr. Anita Singhal

Classes- B Sc III Sec. (A, C &D)

Subject- (Inorganic Chemistry)

Sem- VI

January

Second Week **Section – AOrganometallic Chemistry**

Definition, nomenclature and classification of organometallic compounds.

Third Week Preparation, properties, and bonding of alkyls of Li, Al, Hg, and Sn.

Fourth WeekA brief account of metal-ethylenic complexes, mononuclear carbonyls and the nature of bonding in metal carbonyls.

February

First Week **Section – BAcids and Bases, HSAB Concept**

Arrhenius, Bronsted – Lowry, the Lux – Flood, Solvent system.

Second Week Lewis concepts of acids & bases, relative strength of acids & bases. **Assignment**

Third Week Concept of Hard and Soft Acids & Bases. Symbiosis, electronegativity and hardness and softness. **Test**

Fourth Week **Section—C Bioinorganic Chemistry**

Essential and trace elements in biological processes.

March

First Week Metalloporphyrins with special reference to haemoglobin and myoglobin.

Second Week **Holi Break**

Third Week Biological role of alkali and alkaline earth metal ions with special reference to Ca2+.

Fourth Week Nitrogen fixation.

April

Section—D Silicones and Phosphazenes

First Week Preparation and properties of Silicones and phosphazenes.

Second Week Structure and uses of Silicones and phosphazenes.

Third Week **Revision**

Fourth Week **Group discussion and problem solving**

Govt. Post Graduate College For Women, Rohtak

Dept. of Chemistry Lesson Plan 2024-25 Even Semester

Name of Faculty- Dr. Suman (MIS-E2954)

Classes- B Sc III (Sec. – B)Sem. -VI &

B Sc II (Sec. – A & C) Sem. -IV

Subject- BSc III (Inorganic & Organic Chemistry)

BSc II (Physical & Organic Chemistry)

January

B Sc – III (Inorganic Chemistry)

Second Week Section – AOrganometallic Chemistry

Definition, nomenclature and classification of organometallic compounds.

Third Week Preparation, properties, and bonding of alkyls of Li, Al, Hg, and Sn.

Fourth Week A brief account of metal-ethylenic complexes, mononuclear carbonyls and the nature of bonding in metal carbonyls.

B Sc – II (Physical Chemistry)

Second Week Thermodynamics – IV Third law of thermodynamics

Nernst heat theorem, statement of concept of residual entropy,

Third Week Evaluation of absolute entropy from heat capacity data. Gibbs and Helmholtz functions.

Fourth Week Gibbs function (G) and Helmholtz function (A) as thermodynamic quantities,

February

B Sc – III **(Inorganic Chemistry)**

First Week **Section – BAcids and Bases, HSAB Concept**

Arrhenius, Bronsted – Lowry, the Lux – Flood, Solvent system, Lewis concepts of acids & bases, Relative strength of acids & bases.

Second Week Concept of Hard and Soft Acids & Bases. Symbiosis, Electronegativity and hardness and softness. **Assignment &Test**

Third Week **Section—C Bioinorganic Chemistry**

Essential and trace elements in biological processes, Metalloporphyrins with special reference to haemoglobin and myoglobin.

Fourth Week Biological role of alkali and alkaline earth metal ions with special reference to Ca2+. Nitrogen fixation.

B Sc – II **(Physical Chemistry)**

First WeekA &G as criteria for thermodynamic equilibrium and spontaneity, their advantage over entropy change.

Second Week Variation of G and A with P, V and T. **Assignment**

Third Week **Section-C** **Electrochemistry-III**

Electrolytic and Galvanic cells – reversible & Irreversible cells , conventional representation of electrochemical cells. EMF of cell and its measurement, We ton standard cell, activity and activity coefficients.

Fourth Week Calculation of thermodynamic quantities of cell reaction (G, H & K). Types of reversible electrodes – metal- metal ion gas electrode, metal –insoluble salt- anion and redox electrodes. Electrode reactions.**Test**

March

B Sc – III **(Inorganic Chemistry)**

First Week **Section—D Silicones and Phosphazenes**

Preparation and properties of Silicones and phosphazenes.

Second Week **Holi Break**

Third Week Structure and uses of Silicones and phosphazenes. **Revision**

Fourth Week **B Sc – III** **(Organic Chemistry)**

Section – D Amino Acids, Peptides & Proteins

Classification, of amino acids. Acid-base behavior, isoelectric point and electrophoresis, Preparation of -amino acids,Structure and nomenclature of peptides and proteins.

B Sc – II **(Physical Chemistry)**

First Week Nernst equations, derivation of cell EMF and single electrode potential. Standard Hydrogen electrode, reference electrodes, standard electrodes potential, sign conventions, electrochemical series and its applications.

Second Week **Holi Break**

Third Week **B Sc – II** **(Organic Chemistry)**

Section-C **Diazonium Salts**

Mechanism of diazotisation, structure of benzene diazonium chloride.

Fourth Week Replacement of diazo group by H, OH, F, Cl, Br, I, NO_2 and CN groups, reduction of diazonium salts to hydrazines, coupling reaction and its synthetic application.

April

First Week **B Sc – III** **(Organic Chemistry)**

Classification of proteins. Peptide structure determination, end group analysis, selective hydrolysis of peptides. Classical and solid phase peptide synthesis.

Second Week Structures of peptides and proteins: Primary & Secondary structure.

Third Week **Revision**

Fourth Week **Problem solving**

First Week **B Sc – II** **(Organic Chemistry)**

Nitro Compounds

Preparation of nitro alkanes and nitro arenes and their chemical reactions. Mechanism of electrophilic substitution reactions in nitro arenes and their reductions in acidic, neutral and alkaline medium.

Second WeekRevision

Third Week Group Discussion

Fourth Week Problem Solving

Lesson Plan(2024-25)

Name of the Extension Lecturer : **MANU KUMARI**

Class and Section : B.Sc. (III), Medical, Section- A (6th semester)

B.Sc. (I), Medical sec A,(skill- fuel chemistry), 2ND sem.

Subject : **INORGANIC CHEMISTRY, FUEL CHEMISTRY**

January 2025(B.Sc. (III)	Topics
Week 2	**SILICONES AND PHOSPHAZENES:** Preparation of silicones, all properties of silicones
Week 3	Uses of silicones , silicones fluids & oils
Week 4	silicones elastomers(rubber),silicon resin
February 2025 Week1 B.Sc. (III)	Polysiloxane copolymers
B.Sc. (I),	**Solid Fuels** Coal - origin, chemical composition, calorific value, classification, characteristics & distribution of Indian coals,
Week 2 B.Sc. (III)	poly phosphazenes: preparation of phosphazenes
B.Sc. (I),	storage and spontaneous combustion of coal, coal washing and blending, petrographic constituents of coal,
Week 3 B.Sc. (III)	Properties of phosphazenes, nature of bonding in phosphazenes
B.Sc. (I),	carbonization of coal, manufacture and properties of metallurgical coke, recovery of by-products.
Week 4 B.Sc. (III)	dπ-pπ bonding model for cyclotriphosphazenes
B.Sc. (I),	
March 2025 Week 1	cyclic phosphazenes

B.Sc. (III)	
B.Sc. (I),	**Liquid Fuels** Origin and composition of crude oil
Week 2 B.Sc. (III)	
Week 3 B.Sc. (III)	Uses of phosphazenes
B.Sc. (I),	crude oil distillation and its products with special reference to gasoline,
Week 4 B.Sc. (III)	Test & Assignment of SILCONES & PHOSPHAZENES
B.Sc. (I),	kerosene and diesel oil, cracking and reforming, coal tar distillation products, shale oil.
April 2025 Week 1 B.Sc. (III)	**ACIDS & BASES, HSAB CONCEPT:** Arhenius,bronsted-lowry,the lux-flood, solvent system & lewis concept of acids & bases with examples
B.Sc. (I),	**Gaseous Fuel:** Natural gas, coal gas, coke oven and blast furnace gas
week 2 B.Sc. (III)	Relative strength of acids & bases: acidic strength of hydroacids and oxo – acids
B.Sc. (I),	manufacture of water gas and producer gas, carburetted water gas
Week 3 B.Sc. (III)	Relative strength of hydrated cations & organic acids, acidic & basic strength of oxides
B.Sc. (I),	Synthetic fuels: hydrogenation of coal, Fischer–Tropsch synthesis.
Week 4 B.Sc. (III)	Concept of hard and soft acids & bases, their characterization, pearson's HSAB principle, Symbiosis,electronegativity & hardness and softness
B.Sc. (I),	**Nuclear Fuels** Introduction, nuclear fuels and nuclear reactors
May 2025(B.Sc. (I),)	

Week 1	moderators and structural materials, introduction to renewable energy sources. Combustion:
Week 2	combustion of solids fuels, calculation of volume and weight of air necessary for combustion of fuels
Week 3	gas analysis.
Week 4	Test & Assignment of Nuclear Fuels

LESSION PLAN

Name of the teacher… Dr. vijaita

Class and Section:… B. Sc. III Section B,D and B.Sc. Ist sec D

Subject: Organic and Physical and inorganic Chemistry

January 2025

First week winter holidays

Second week BSc III unit 3 Solutions, Dilute solution and Colligative properties. Introduction, Ideal and Non ideal solutions. (Assignment topic in extra lecture)

SILICONES AND PHOSPHAZENES: Preparation of silicones, all properties of silicones

Third week BSc III various method to explain concentration terms
ntroduction of solution and colligative properties ,
Uses of silicones , silicones fluids & oils

Fourth week BSc III activity and activity coefficient, properties of dilute solutions,c olligative properties

silicones elastomers(rubber),silicon resin

Feb 2025

First week BSc III raoults law, relative lowering of vapour pressure, molecular weight determination from relative lowering of vapour pressure

Polysiloxane copolymers

Second week BSc III raoults law, relative lowering of vapour pressure,molecular weight determination from relative lowering of vapour pressure

Properties of phosphazenes, nature of bonding in phosphazenes

BSc 1st Unit 1 Non-aqueous Solvents Physical properties of a solvent, types of solvents and their general characteristics, solvent system concept, reactions in non-aqueous solvents with reference to liquid NH3 and liquid SO2

Third week BSc III numericals related to relative lowering of vapour pressure, osmosis and osmotic pressure, numericals related to relative lowering of vapour pressure

dπ-pπ bonding model for cyclotriphosphazenes

BSc 1st Hard and soft acids and bases (HSAB concept), applications of HSAB principle. Noble Gases 27 Occurrence and uses,

Fourth week BSc III elevation of boiling point and molecular weight determination, numericals related to elevation of boiling point, viva-voice ,numericals related to osmotic pressure, elevation of boiling point and molecular weight determination,numericals related to elevation of boiling point, viva-voice elevation of boiling point and molecular weight determination

cyclic phosphazenes

BSc 1st rationalization of inertness of noble gases, clathrates, preparation and properties, chemical properties of the noble gases,

March 2025

First week BSc III thermodynamic derivation of relation between molecular weight and colligative properties , abnormal molecular mass, degree of association and dissociation

Uses of phosphazenes

Heterocyclic compounds, Introduction, Structures of pyrole, furan and thiophene: Aromatic character, Selection rule for electronic transitions, Preparation and properties of Pyrrole & Furan.

BSc 1st chemistry of xenon: structure and bonding in xenon fluorides, oxides and oxyfluorides (XeF2, XeF4, XeF6, XeO3, XeO4, XeOF2, XeO2F2, XeOF4, XeF5 + , XeF5

Third week BSc III introduction of electronic spectrum, discussion about spectrum, concept of potential energy curve for bonding molecular orbitals ,introduction of electronic spectrum, discussion about spectrum,concept of potential energy curve for bonding molecular orbitals, bonding in molecular orbitals and its effect on shape of molecule

Test & Assignment of SILCONES & PHOSPHAZENES

BSc 1st nature of bonding in noble gas compounds (valence bond treatment and MO treatment for XeF2 and XeF4), molecular shapes of noble gas compounds (VSEPR theory).

Fourth week BSc III description of selection rule, franck-condon principal

BSc 1st Unit–II Thermodynamics Brief discussion upto first law of thermodynamics, heat capacity, heat capacities at constant volume and pressure and their relationship

April 2025

First week BSc III introduction of photochemistry and interaction of radiation with matter, difference between thermal and photochemical process with some examples

Sessional test of both classes

BSc 1st Joule's law, Joule–Thomson coefficient for ideal gases and real gases and inversion temperature, calculation of work and heat, dU & dH for the expansion of ideal gases and real gases under isothermal and adiabatic conditions for reversible and irreversible processes,

Second week BSc III stark-einstein law, brief introduction to jablonski diagram, quantum yield and factors affecting quantum yield, photosensitization process and various reaction involving photosensitization

BSc 1st . enthalpy and internal energy change at constant P, V &T, Kirchhoff's equation. Second law of thermodynamics and its limitations

Third week BSc III Phase Equilibrium, Intoduction, phase components and degrees of freedom, Phase equilibrium of one component system example water and sulphur system, Thermodynamic derivation of Gibbs phase rule. (Phase equilibrium of one component system example water and sulphur system IN Extra lecture)

BSc 1st different statements of the law, Carnot's cycle and its efficiency, Carnot's theorem, thermodynamics scale of temperature. Concept of entropy– entropy as a state function, entropy change in ideal gases, entropy as a function of V & T

Fourth week BSc III Phase equilibrium of two component system example solid liquid equilibria system (Pb-Ag) system. (Pattinson process for desilverisation of Lead in extra lecture).

BSc 1st entropy as a function of P & T, entropy as a function of P & V, entropy as a criterion of spontaneity and equilibrium. Unit–III Hydrocarbons Alkanes: Physical and chemical properties of alkanes, free radical substitutions, halogenation, concept of relative reactivity v/s selectivity

May 2025

First week BSc 1st ,. Alkenes: Structure and isomerism, general methods of preparation, physical and chemical properties. Mechanism of E1, E2, E1cb reactions, Saytzeff and Hoffmann elimination, electrophilic addition (mechanism with suitable examples)

Second week BSc 1st Markownikoff rule, syn and anti-addition, addition of H2, X2 oxymercuration-demercuration, hydroboration- oxidation, ozonolysis, hydroxylation. Alkynes: General methods of preparation, reactions of alkynes: acidity, electrophilic and nucleophilic additions, hydration to form carbonyl compounds, alkylation of terminal alkynes.

Third week Unit–IV Aromatic Hydrocarbons and Dienes Concept of aromaticity, Huckel's rule, aromatic character of arenes, cyclic carbocations and carbanions with suitable examples and heterocyclic compounds with suitable examples, electrophilic aromatic substitution: halogenation, nitration, sulphonation, Friedel Crafts alkylation/ acylation with their mechanism, directing effects of groups in electrophilic substitution

Fourth week nomenclature and classification of dienes: isolated, conjugated and cumulated dienes. Structure of butadiene, chemical reactions-1, 2 and 1, 4 additions (electrophilic and free radical mechanism), Diels – Alder reaction

LESSION PLAN-2024-25(Even Sem.)

Name of the teacher… SANGITA

Class and Section:… B. Sc. I Section(Phy Hons) and B.Sc. Ist sec B

Subject: B.Sc. 1st Chemistry in Major Physics

Discipline Specific Course- Chemistry (B.Sc. 1st- Section B)

Feb 2025

First week

Second week BSc 1st Unit 1 Non-aqueous Solvents Physical properties of a solvent, types of solvents and their general characteristics, solvent system concept, reactions in non-aqueous solvents with reference to liquid NH3 and liquid SO2

B.Sc 1(Phy Hons) – Occurance of elements in nature, physical and chemical properties of metals and non metals, minerals and ores, metallurgical processes(benefaction, roasting, calcination and reduction of metal oxides process)

Third week BSc 1st Hard and soft acids and bases (HSAB concept), applications of HSAB principle. Noble Gases 27 Occurrence and uses,

B.Sc 1st (Phy Hons)- Refining of metals, metallurgy of Fe, Zn, Al and Cu, types of solutions, expression of conc of solutions of solids in liquids.

Fourth week BSc 1st rationalization of inertness of noble gases, clathrates, preparation and properties, chemical properties of the noble gases,

March 2025

First week BSc 1st chemistry of xenon: structure and bonding in xenon fluorides, oxides and oxyfluorides (XeF2, XeF4, XeF6, XeO3, XeO4, XeOF2, XeO2F2, XeOF4, XeF5 + , XeF5

B.Sc. 1st (Phy Hons)- Solubility of gases in liquids and solid solutions, Raoult's Law, colligative properties.

Third week BSc 1stnature of bonding in noble gas compounds (valence bond treatment and MO treatment for XeF2 and XeF4), molecular shapes of noble gas compounds (VSEPR theory).

B.Sc.1st (Phy Hons)- Alkanes: method of preparation and reactions

Alkenes: method of preparation and reactions.

Fourth week BSc 1st Unit–II Thermodynamics Brief discussion upto first law of thermodynamics, heat capacity, heat capacities at constant volume and pressure and their relationship

B.Sc. 1st (Phy Hons)-Alkynes: Method of preparations and reactions.

April 2025

First week BSc 1st Joule's law, Joule–Thomson coefficient for ideal gases and real gases and inversion temperature, calculation of work and heat, dU&dH for the expansion of ideal gases and real gases under isothermal and adiabatic conditions for reversible and irreversible processes,

B.Sc 1st (Phy Hons)- Alkynes: Addition of bromine and alkline KMnO4, ozonolysis and oxidation with hot alk KMn4, hydration to form carbonyl compounds.

Second week BSc 1st. Enthalpy and internal energy change at constant P, V &T, Kirchhoff's equation. Second law of thermodynamics and its limitations

B.Sc. 1st(Phy hons)- Class Test Unit 1st.

Third week BSc 1stdifferent statements of the law, Carnot's cycle and its efficiency, Carnot's theorem, thermodynamics scale of temperature. Concept of entropy– entropy as a state function, entropy change in ideal gases, entropy as a function of V & T

B.Sc 1st(phy Hons)- Aromatic Hydrocarbons-Benezene- structure and preparation, class Test Unit 2nd.

Fourth week BSc 1stentropy as a function of P & T, entropy as a function of P & V, entropy as a criterion of spontaneity and equilibrium. Unit–III Hydrocarbons Alkanes: Physical and chemical properties of alkanes, free radical substitutions, halogenation, concept of relative reactivity v/s selectivity

B.Sc. 1st(Phy Hons)- Benezene- Electrophilic and substitution reactions.

May 2025

First week BSc 1st,. Alkenes: Structure and isomerism, general methods of preparation, physical and chemical properties. Mechanism of E1, E2, E1cb reactions, Saytzeff and Hoffmann elimination, electrophilic addition (mechanism with suitable examples)

B.Sc 1st (Phy Hons)-benezene-reaction, class Test Unit 3rd.

Second week BSc 1st Markownikoff rule, syn and anti-addition, addition of H2, X2 oxymercuration-demercuration, hydroboration- oxidation, ozonolysis, hydroxylation. Alkynes: General methods of preparation, reactions of alkynes: acidity, electrophilic and nucleophilic additions, hydration to form carbonyl compounds, alkylation of terminal alkynes, Class Test

B.Sc 1st(Phy Hons)- Class Test Unit 4th, Revision.

Third week Unit–IV Aromatic Hydrocarbons and Dienes Concept of aromaticity, Huckel's rule, aromatic character of arenes, cyclic carbocations and carbanions with suitable examples and heterocyclic compounds with suitable examples, electrophilic aromatic substitution: halogenation, nitration, sulphonation, Friedel Crafts alkylation/ acylation with their mechanism, directing effects of groups in electrophilic substitution**,** Class Test.

B.Sc.1st (Phy Hons)- Revision

Fourth week nomenclature and classification of dienes: isolated, conjugated and cumulated dienes. Structure of butadiene, chemical reactions- 1, 2 and 1, 4 additions (electrophilic and free radical mechanism), Diels – Alder reaction

B.Sc. 1st(Phy Hons)- Revision

LESSON PLAN-2024-25(Even Sem.)

Name of the teacher… PREETI

Class and Section:… B. Sc. I Section(B, skill) and B.Sc. Ist sec C

SubjectB.Sc. (I),Non Medical sec B,(skill- fuel chemistry), 2ND sem

Discipline Specific Course- Chemistry (B.Sc. 1st- Section C)

Feb 2025

Second week BSc 1st Unit 1 Non-aqueous Solvents Physical properties of a solvent, types of solvents and their general characteristics, solvent system concept, reactions in non-aqueous solvents with reference to liquid NH3 and liquid SO2

Solid Fuels

Coal - origin, chemical composition, calorific value, classification, characteristics & distribution of Indiancoals,

Third week BSc 1st Hard and soft acids and bases (HSAB concept), applications of HSAB principle. Noble Gases 27 Occurrence and uses,

storage and spontaneous combustion of coal, coal washing and blending, petrographic constituents ofcoal,

Fourth week BSc 1st rationalization of inertness of noble gases, clathrates, preparation and properties, chemical properties of the noble gases,

carbonization of coal, manufacture and properties of metallurgical coke, recovery of by-products

March 2025

First week BSc 1st chemistry of xenon: structure and bonding in xenon fluorides, oxides and oxyfluorides (XeF2, XeF4, XeF6, XeO3, XeO4, XeOF2, XeO2F2, XeOF4, XeF5 + , XeF5

Liquid Fuels

Origin and composition of crude oil

Third week BSc 1st nature of bonding in noble gas compounds (valence bond treatment and MO treatment for XeF2 and XeF4), molecular shapes of noble gas compounds (VSEPR theory).

crude oil distillation and its products with special reference to gasoline

Fourth week BSc 1st Unit–II Thermodynamics Brief discussion upto first law of thermodynamics, heat capacity, heat capacities at constant volume and pressure and their relationship

kerosene and diesel oil, cracking and reforming, coal tar distillation products, shale oil

April 2025

First week BSc 1st Joule's law, Joule–Thomson coefficient for ideal gases and real gases and inversion temperature, calculation of work and heat, dU&dH for the expansion of ideal gases and real gases under isothermal and adiabatic conditions for reversible and irreversible processes,

Gaseous Fuel:
Natural gas, coal gas, coke oven and blast furnace gas

Second week BSc 1st. Enthalpy and internal energy change at constant P, V &T, Kirchhoff's equation. Second law of thermodynamics and its limitations

manufacture of water gas and producer gas,carburetted water gas

Third week BSc 1st different statements of the law, Carnot's cycle and its efficiency, Carnot's theorem, thermodynamics scale of temperature. Concept of entropy– entropy as a state function, entropy change in ideal gases, entropy as a function of V & T

Synthetic fuels: hydrogenation of coal, Fischer–Tropsch synthesis

Fourth week BSc 1st entropy as a function of P & T, entropy as a function of P & V, entropy as a criterion of spontaneity and equilibrium. Unit–III Hydrocarbons Alkanes: Physical and chemical properties of alkanes, free radical substitutions, halogenation, concept of relative reactivity v/s selectivity

Nuclear Fuels

Introduction, nuclear fuels and nuclear reactors

May 2025

First week BSc 1st,. Alkenes: Structure and isomerism, general methods of preparation, physical and chemical properties. Mechanism of E1, E2, E1cb reactions, Saytzeff and Hoffmann elimination, electrophilic addition (mechanism with suitable examples)

moderators and structural materials, introduction to renewable energy sources. Combustion:

Second week BSc 1st Markownikoff rule, syn and anti-addition, addition of H2, X2 oxymercuration-demercuration, hydroboration- oxidation, ozonolysis, hydroxylation. Alkynes: General methods of preparation, reactions of alkynes: acidity, electrophilic and nucleophilic additions, hydration to form carbonyl compounds, alkylation of terminal alkynes, Class Test

combustion of solids fuels, calculation of volume and weight of airnecessary for combustion of fuels

Third week Unit–IV Aromatic Hydrocarbons and Dienes Concept of aromaticity, Huckel's rule, aromatic character of arenes, cyclic carbocations and carbanions with suitable examples and heterocyclic compounds with suitable examples, electrophilic aromatic substitution: halogenation, nitration, sulphonation, Friedel Crafts alkylation/ acylation with their mechanism, directing effects of groups in electrophilic substitution**,** Class Test.

gas analysis.

Fourth week nomenclature and classification of dienes: isolated, conjugated and cumulated dienes. Structure of butadiene, chemical reactions- 1, 2 and 1, 4 additions (electrophilic and free radical mechanism), Diels – Alder reaction

Test & Assignment of Nuclear Fuels

Lesson Plan(2024-25)

Name of the Extension Lecturer : Seema

Class and Section : B.Sc. (II nd year), Section -B and C (4th semester)

Subject : Physical Chemistry and organic chemistry

January 2025(B.Sc. (II)	Topics
Week 2	Thermodynamics -lll Second law of thermodynamics,Need for the law, Different statements of law, **Amines:** **Structure and nomenclature of amines, physical properties**
Week 3	Carnot's cycles and it's efficiency, carnot's theorem, Thermodynamics scale of temperature . Separation of a mixture of primary , secondary and tertiary amines
Week 4	Concept of entropy-entropy as a state function,Entropy as a function of V and T Structural features affecting baicity of amines
B.Sc. (ll),	Thermodynamics -lV Third law of thermodynamics:Nernst heat theorem, statement of concept of residual Entropy. Reduction of nitro compounds,nitriles,reductive amination of aldehydic and ketonic compounds.
Week 2 B.Sc. (II)	evaluation of absolute entropy from heat capacity data.Gibbs and Helmholtz functions Gabriel- phthalimide reaction,Hofmann bromamide reaction
B.Sc. (Il),	Gibbs function (G) and Helmholtz function(A) as thermodynamic quantities Electrophilic aromatic substitution in aryl amines

Week 3 B.Sc. (II)	A and G as criteria for thermodynamic equilibrium and spontaneity Reaction of amines with nitrous acid
B.Sc. (lI),	Their advantage over entropy change.Variation of G and A with P,V,and T **Diazonium salts:mechanism of diazotisation**
Week 4 B.Sc. (II)	Electrochemistry -lll Electrolytic and Galvanic cells-reversible and irreversible cells Structure of benzene diazonium chloride
B.Sc. (lI),	Ketones with particular reference to the synthesis of aldehydes from acid chlorides
March 2025 Week 1 B.Sc. (II)	Conventional representation of electrochemical cells Replacement of diazo group by H,OH,,F,CL,Br,I,NO2andCN group
B.Sc. (Il),	EMF of cell and its measurement cells Weston standard cell
Week 3 B.Sc. (II)	Reduction ofdiazonium salts to hydrazines Activity and activitie coefficients Coupling reaction and its synthetic application.
Week 4	Calculation of thermodynamic quantities of cell reaction ($\Delta G, \Delta H$ and K)
	Test & Assignments
B.Sc. (lI),	Assignment on entropy Assignment on Amines
April 2025 Week 1 B.Sc. (II)	Types of reversible elecrodes- metal-metal ion gas electrode Preparation of nitro alkanes
B.Sc. (Il),	Metal- insoluble salt anion and redox electrodes.
week 2 B.Sc. (II)	Electrode reactions, Nernst equations Preparation of nitro arenes

B.Sc. (ll),	Derivation of cell EMF and single electrode potential
Week 3 B.Sc. (II)	Standard Hydrogen electrode, reference electrode, Chemical reaction of nitro alkanes and nitro arenes
B.Sc. (ll),	Standard electrodes potential,sign conventions, electrochemical series and it's applications
Week 4 B.Sc. (II)	Electrochemistry -IV Concentration cells with and without transference Mechanism of electrophilic substitution reactions in nitro arenes
B.Sc. (Il)	Liquid junction potential
May 2025(B.Sc. (Il) Week 1	Applications of EMF measurement i.e valency of ions, solubility product activity coefficient Nitro arenes and their reduction in acidic
Week 2	Potentiometric titration (acid base and redox). determination of pH using Hydrogen electrode Assignment and test on Diazonium salts
Week 3	Quinhydrone electrode and glass electrode by potentiometric methods Neutral and alkaline medium
Week 4	Test & Assignment **Test and assignment of nitro compounds**

Government College for Women, Rohtak
Department of Chemistry
Lesson Plan, Even Semester (Session 2024-25)
Name of Extension Lecturer:MEENA (E- 3038)
B.Sc.4th Sem (Med.) Sec – A,B
B.Sc.6th Sem (Med. Biochem) Sec – B

Subject **-Inorganic ,Physical, Organic and Bio-Chemistry**

(Teaching Term-7thJan- 30thApril, 2025)

January, 2025

Second Week --

BSc.(Med) 4th sem-

Sec A-**Thermodynamics-III**

Second law of thermodynamics, need for the law, different statements of the law,

Carnot's cycles and its efficiency, Carnot's theorm,

SecB-**Aldehydes and Ketones**

Nomenclature and structure of the carbonyl group.

B.Sc.Med-Biochem3rd:Lipid Metabolsim Introduction

Third Week --

BSc.(Med)4th sem-

Sec A-Thermodynamics scale of temperature. Concept of entropy – entropy as a state function,

SecB-. Synthesis of aldehydes and ketones with particular reference to the synthesis of aldehydes from acid chlorides,

B.Sc.Med-Biochem3rd: Structure and function of lipids.

Fourth Week –

BSc.(Med)4th sem-

Sec A-entropy as a function of V & T, entropy as a function of P & T,

SecB-advantage of oxidation of alcohols with chromium trioxide (Sarett

reagent) pyridinium chlorochromate (PCC) and pyridinium dichromate.,

B.Sc.Med-Biochem3rd:Fatty acid Biosynthesis

February, 2025

First Week –

BSc.(Med)4th sem-

Sec A-entropy change in physica l change,

entropy as a criteria of spontaneity and equilibrium.

SecB-Physical properties. Comparison of reactivities of aldehydes and ketones.

B.Sc.Med-Biochem3rd:Beta oxidation

Second Week –

BSc.(Med)4th sem-

Sec A-Entropy change in ideal gases and mixing of gases.

SecB-Mechanism of nucleophilic additions to carbonyl group with particular

emphasis on benzoin, aldol, Perkin and Knoevenagel condensations.

B.Sc.Med-Biochem3rd:Saturated and unsaturated Fatty acids

Third Week –

BSc.(Med)4th sem-

Sec A-**Chemistry of f – block elements Lanthanides**

Electronic structure, oxidation states

SecB-Condensation with ammonia and its derivatives. Wittig reaction. Mannich reaction.Oxidation of aldehydes, Baeyer– Villiger oxidation of ketones,

B.Sc.Med-Biochem3rd:Storage of Fatty acids

Fourth Week –

BSc.(Med) 4th sem-

Sec A-ionic radii and lanthanide contraction,

SecB-Cannizzaro reaction. MPV, Clemmensen, Wolff-Kishner, LiAlH4 and NaBH4 reduction

B.Sc.Med-Biochem3rd:Mobilizationof Fatty acids

March, 2025 (9th -16th Holi Vacation)

First Week –

BSc.(Med) 4th sem-

Sec A-complex formation, occurrence and isolation,

SecB-**Chemistry of f – block elements Lanthanides**

Electronic structure, oxidation states,ionic radii and lanthanide contraction,

B.Sc.Med-Biochem3rd:Nitrogen Metabolism

Second Week -- Holi Vacation

Third Week --

BSc.(Med) 4th sem-

Sec A- lanthanide compounds.

SecB-complex formation, occurrence and isolation,

B.Sc.Med-Biochem3rd:Biology of nitrogen fixation

Fourth Week –

BSc.(Med) 4th sem-

Sec A-Test and Problems solving

SecB-lanthanide compounds.

B.Sc.Med-Biochem3rd:Introduction of Nitrate reductase

April, 2025

First Week –

BSc.(Med) 4th sem-

Sec A-**Chemis try of f – block elements**

Actinides General features and chemistry of actinides,

SecB-**Chemis try of f – block elements**

Actinides General features and chemistry of actinides,

B.Sc.Med-Biochem3rd:Importance of Nitrate reductase

Second Week –

BSc.(Med)4th sem-

Sec A-chemistry of separation of Np, Pu and Am from U,

SecB-chemistry of separation of Np, Pu and Am from U,

B.Sc.Med-Biochem3rd:Regulation of Nitrate reductase

Third Week --

BSc.(Med) 4th sem-

Sec A-, Comparison of properties of Lanthanides and Actinides

SecB-, Comparison of properties of Lanthanides and Actinides

B.Sc.Med-Biochem3rd:Ammonium Assimilation

Fourth Week – **BSc.(Med) 4th sem-**

Sec A- Assignment and Viva

SecB-Test and Problems solving

B.Sc.Med-Biochem3rd: Test and assignment submission