GDC Memorial College, Bahal (Bhiwani)

NAAC Accredited Grade "B"

Lesson Plan- January to May 2025

Name - Dr.SUMAN DEVI **Department - CHEMISTRY**

Class - B.Sc. **Subject -Chemistry-II**

Semester - 2nd **Subject Code - 24UN-CHE-201**

Week-1	**UNIT-1**
1-Jan-25	Introduction of syllabus
2-Jan-25	Covalent Bond-Valence bond theory approach
3-Jan-25	Shapes of simple inorganic molecules and ions based on (VSEPR) theory
Week-2	
6-Jan-25	Hybridization with suitable examples of linear, trigonal planar, square planar,
7-Jan-25	tetrahedral, trigonal bipyramidal and octahedral arrangements
8-Jan-25	MOT of homonuclear (N2, O2) and heteronuclear (CO and NO) diatomic molecules
10-Jan-25	Dipole moment and percentage ionic character in covalent bond.
Week-3	
13-Jan-25	Ionic structures (NaCl, CsCl, ZnS (Zinc blende, CaF2)
14-Jan-25	size effects, radius ratio rule and its limitations
15-Jan-25	Concept of Lattice energy, Born- Haber cycle
17-Jan-25	Solvation energy and its relationship with solubility of Ionic solids
Week-4	
20-Jan-25	Polarizing power and Polarisability of ions, Fajan's rule
21-Jan-25	**Unit-2** Chemical Kinetics-Concept of reaction rates, rate equation
22-Jan-25	Factors influencing the rate of reaction
24-Jan-25	Order and molecularity of a reaction, integrated rate expression for zero
Week-5	
27-Jan-25	first, Half-life period of a reaction
28-Jan-25	Arrhenius equation.
29-Jan-25	Distribution Law-Nernst distribution law – its thermodynamic derivation,
31-Jan-25	Nernst distribution law after association and dissociation of solute in one of the phases of distribution law
Week-6	
3-Feb-25	(i) Determination of degree of hydrolysis and hydrolysis constant of aniline hydrochloride
4-Feb-25	**UNIT-3**
5-Feb-25	Alkanes and Cycloalkanes-Nomenclature, classification of carbon atoms in alkanes and its structure
7-Feb-25	Isomerism in alkanes, sources.
Week-7	
10-Feb-25	Methods of formation: Wurtz reaction, Kolbe reaction,
11-Feb-25	Kolbe reaction, Corey- House reaction and decarboxylation of carboxylic acids
12-Feb-25	Physical properties. Mechanism of free radical halogenation of alkanes: reactivity and selectivity
14-Feb-25	Do
Week-8	
17-Feb-25	Nomenclature of Cycloalkanes, Baeyer' s strain theory and its limitations, theory of strainless rings
18-Feb-25	Do
19-Feb-25	Do
21-Feb-25	Alkenes-Nomenclature of alkenes and its structure
Week-9	
24-Feb-25	Methods of formation: dehydration of alcohols, dehydrohalogenation of alkyl halide
25-Feb-25	Do

26-Feb-25	Do
28-Feb-25	Hofmann elimination and their mechanism
Week-10	
3-Mar-25	The Saytzeff rule and relative stabilities of alkenes
4-Mar-25	Chemical reactions: electrophilic and free radical additions
5-Mar-25	Addition of halogens, halogen acids, hydroboration–oxidation
7-Mar-25	oxymercuration-reduction, ozonolysis and hydration.
Week-11	
10-Mar-25	Markownikoff's rule of addition.
11-Mar-25	**UNIT-4**
12-Mar-25	Hydrogen Bonding – Definition, types,

GDC Memorial College, Bahal (Bhiwani)

NAAC Accredited Grade "B"

Lesson Plan- January to May, 2025

Name - Dr. Anita **Department - Chemistry**

Class - B.Sc. (Computer Sci.) **Subject - Minor Chemistry-II**

Semester - 2nd **Subject Code - 24UN-CHE-203**

Week-1	**UNIT-1**
1-Jan-25	General principles of periodic table
6-Jan-25	Aufbau and Pauli exclusion principles
6-Jan-25	Hund's multiplicity rule
Week-2	
7-Jan-25	Electronic configurations of the elements
8-Jan-25	Effective nuclear charge
Week-3	
13-Jan-25	Slater's rules
14-Jan-25	Atomic and ionic radii
15-Jan-25	Ionization energy
Week-4	
20-Jan-25	Electronegativity –explanation
21-Jan-25	Valence bond theory and its limitations
22-Jan-25	Directional characteristics of covalent bond
Week-5	
27-Jan-25	various types of hybridization
28-Jan-25	shapes of simple inorganic molecules and ions
29-Jan-25	BeF2, BF3, CH4, PF5, SF6,IF7 SO42 -, ClO4-
Week-6	
3-Feb-25	question answer
4-Feb-25	Calss test
5-Feb-25	revision
Week-7	**UNIT-II**
10-Feb-25	MO theoryof heteronuclear (CO and NO) diatomic molecules
11-Feb-25	Bond strength and bond energy
12-Feb-25	Percentage ionic character from dipole moment
Week-8	
17-Feb-25	Electronegativity difference
18-Feb-25	Ionic structures (NaCl,CsCl, ZnS(Zinc Blende),CaF2
19-Feb-25	
Week-9	
24-Feb-25	Radius ratio effect and lattice energy
25-Feb-25	coordination number and limitation of radius ratio rule
Week-10	
3-Mar-25	semiconductors
4-Mar-25	lattice defects
5-Mar-25	Born-Haber cycle

Week-11	
10-Mar-25	Fajan's rule
11-Mar-25	Solvation energy and its relation with solubility of ionic solids
12-Mar-25	polarizing power and polarisability of ions
Week-12	**UNIT -III**
17-Mar-25	Solid State-Introduction
18-Mar-25	Defects and Non-stoichiometry:
19-Mar-25	Intrinsic and extrinsic defects- point defects
Week-13	
24-Mar-25	line and plane defects, colour centres,
25-Mar-25	non-stoichiometry and defects.
26-Mar-25	Thermodynamics of Schottkyand Frenkel defect formation
	vacancies- Schottky defects and Frenkel defects.
Week-14	**UNIT -IV**
7-Apr-25	Concept of isomerism and its types
8-Apr-25	Explanation of enatiomers and diasteremers and type
9-Apr-25	Structure of enantiomers
Week-15	
14-Apr-25	Optical avtivity
15-Apr-25	R&S configuration
16-Apr-25	Geometical isomers
Week-16	
21-Apr-25	Determination of geometry
22.04.2025	do
23.04.2025	do
28.04.2025	Question Answer
29.04.2025	Class test
30.04.2025	revision
	Dr. Anita
	Signature

GDC Memorial College, Bahal (Bhiwani)

NAAC Accredited Grade "B"

Lesson Plan- January to May 2025

Name - Dr.SUMAN DEVI **Department - CHEMISTRY**

Class - B.Sc. **Subject -Functional gp. Org. chem.-III & electrochemistry**

Semester - 4th **Subject Code - 20UCHE401**

Week-1	**UNIT-1**
1-Jan-25	Introduction of syllabus
2-Jan-25	Amines-Structure and nomenclature of amines,physical properties
3-Jan-25	Do
Week-2	
6-Jan-25	Separation of mixture of primary, secondary and tertiary amines
7-Jan-25	Structural features affectinf basicity of amines
8-Jan-25	Preparation of alkyl and aryl amines-Reduction of nitro compounds, nitriles,
10-Jan-25	Reductive amination of aldehydes and ketonic compounds
Week-3	
13-Jan-25	Gabriel phthalimide reaction
14-Jan-25	Hoffmann Bromamide reaction
15-Jan-25	Elecrophilic aromatic substitution in aryl amines
17-Jan-25	Reaction of amines with nitrous acid
Week-4	**UNIT-2**
20-Jan-25	Diazonium salts-Mechanism of diazotisation
21-Jan-25	Structure of benzene diazonium chloride
22-Jan-25	Replacement of diazo group by H, OH, F, Cl, Br, I, NO2, and CN group
24-Jan-25	Do
Week-5	
27-Jan-25	Do
28-Jan-25	Reduction of diazonium salts to hydrazine
29-Jan-25	Coupling reaction and its synthetic application
31-Jan-25	Nitro compounds-Preparation of nitroalkanes and nitro arenes and their chemical reactions
Week-6	
3-Feb-25	Mechanism of electrophilic substitution reactions in nitro arenes and their reductions in acidic,
4-Feb-25	
5-Feb-25	From acetylenes,from benzene sulphonic acids
7-Feb-25	Reactions(Benzene)-Electrophilic substitutions,nitration,halogenation and sulphonation
Week-7	
10-Feb-25	Reduction in neutral and alkaline medium
11-Feb-25	**UNIT-3**
12-Feb-25	Elecrochemistry-I Elecrolytic conduction,factors affecting electrolytic conduction
14-Feb-25	Do
Week-8	
17-Feb-25	Specific coduction,molar conduction
18-Feb-25	Equivalent conduction and relation among them,their variation with concentration
19-Feb-25	Arrhenius theory of ionization
21-Feb-25	Ostwald's dilution law
Week-9	
24-Feb-25	Debye Huckel Onsagar's equation for strong elecrolytes
25-Feb-25	Kohlarausch's law and application in calculation of conduction of weak electrolytes at infinite dil.
26-Feb-25	Application of conductivity measurements-Determination of degree of dissociation
28-Feb-25	Do
Week-10	
3-Mar-25	Determination of Ka of acids
4-Mar-25	Determination of solubility product of sparingly soluble salts

5-Mar-25	Conductometric titrations
7-Mar-25	Definition of pH and pKa, buffer solution
Week-11	
10-Mar-25	Henderson-Hazel equation
11-Mar-25	Buffer mechanism of buffer action
12-Mar-25	**UNIT-4**

GDC Memorial College, Bahal (Bhiwani)

NAAC Accredited Grade "B"

Lesson Plan- January to June 2025

Name- Mr.Krishan **Department-Chemistry**

Class- B.Sc **Subject-Solutions & Phase Equillibrium**

Semester- 4th **Subject Code- 20U-CHE-402**

Week-1	**UNIT-1**
1-Jan-25	Learning objective and outcome
2-Jan-25	Dilute solutions and colligative properties
Week-2	
6-Jan-25	Ideal and non-ideal solutions
7-Jan-25	do
8-Jan-25	Activity and activity coefficient
9-Jan-25	do
Week-3	
13-Jan-25	Raoult's law
15-Jan-25	Relative lowering of vapour pressure
16-Jan-25	do
Week-4	
20-Jan-25	Elevation in boiling point
21-Jan-25	Elevation in boiling point, Depression in freezing point, Osmosis
22-Jan-25	Thermodynamic derivation of relation between molecular weight
23-Jan-25	elevation in boiling pt.
Week-5	
27-Jan-25	do
28-Jan-25	DOUBT CLASS
29-Jan-25	REVISON DAY
30-Jan-25	WRITTEN TEST
Week-6	**UNIT-2**
3-Feb-25	Phase component and degree of freedom
4-Feb-25	do
5-Feb-25	Thermodynamic derivation of Gibbs phase rule
6-Feb-25	do
Week-7	
10-Feb-25	Phase equilibria of one component system-water,CO2 and sulphur systems
11-Feb-25	do
12-Feb-25	do
13-Feb-25	do
Week-8	
17-Feb-25	Phase equilibria of two component system
18-Feb-25	do
19-Feb-25	do
20-Feb-25	REVISON DAY
Week-9	
24-Feb-25	REVISON DAY
25-Feb-25	Class test
26-Feb-25	DOUBT CLASS

27-Feb-25	DOUBT CLASS
Week-10	**UNIT-3**
3-Mar-25	Carbohydrates-Classification and nomenclature, Monosaccharides
4-Mar-25	do
5-Mar-25	Mechanism of osazone formation, Interconversion of glucose and fructose, Chain lengthening and
6-Mar-25	chain shortening of aldol
Week-11	
10-Mar-25	Configuration of monosaccharides, Erythro and threo diastereomers,
11-Mar-25	do
12-Mar-25	Formation of glycosides
Week-12	
17-Mar-25	Ethers and esters, Determination of ring size of glucose and fructose,
18-Mar-25	do
19-Mar-25	Open chain and cyclic structure of glucose and fructose
20-Mar-25	do
Week-13	
24-Mar-25	Mechanism of mutarotation, Structure of ribose and deoxyribose
25-Mar-25	do
26-Mar-25	do
27-Mar-25	Class test
Week-14	**UNIT-4**
31-Mar-25	Classification of amino acids, Acid-base behaviour, Electric point and electrophoresis
1-Apr-25	do
2-Apr-25	do
3-Apr-25	Preparation of amino acids
Week-15	
7-Apr-25	Structure and nomenclature of peptides and proteins
8-Apr-25	do
9-Apr-25	do
10-Apr-25	classification of proteins
Week-16	
14-Apr-25	do
15-Apr-25	Peptide structure determination, End group analysis,
16-Apr-25	do
17-Apr-25	Selective hydrolysis of peptides, Classical peptides synthesis,
Week-17	
21-Apr-25	do
22-Apr-25	Structure of peptides and proteins-primary and secondary structure
23-Apr-25	do
24-Apr-25	Structure of peptides and proteins-primary and secondary structure
Week-18	
28-Apr-25	Presentation of Student
29-Apr-25	Revision
30-Apr-25	Class test
	Signature of Faculty

GDC Memorial College, Bahal (Bhiwani)

NAAC Accredited Grade "B"

Lesson Plan- January to May, 2025

Name - Dr. Anita **Department - Chemistry**

Class - B.Sc. (N.M&Medical) **Subject - Green Chemistry**

Semester - 4th **Subject Code - 20UCHE-404**

Week-1	**UNIT-1**
1-Jan-25	Introduction to green chemistry
2-Jan-25	Need for Green Chemistry emergence of green chemistry.
Week-2	
8-Jan-25	Limitations in the pursuit of the goals of Green Chemistry,
9-Jan-25	Goals of Green Chemistry.
11-Jan-25	pollution prevention Act of 1990.
Week-3	
	UNIT-2
15-Jan-25	Principles of Green Chemistry
16-Jan-25	Principles of Green Chemistry and their explanation with examples.
18-Jan-25	do
Week-4	
22-Jan-25	Designing a Chemical synthesis:
23-Jan-25	do
25-Jan-25	do
Week-5	
29-Jan-25	Question answer
30-Jan-25	CLASS TEST
5-Feb-25	QUERIES
Week-6	**UNIT-3**
6-Feb-25	Introduction to green reagents
8-Feb-25	Green Reagents: Non-phosgene Isocyanate Synthesis
12-Feb-25	do
Week-7	
13-Feb-25	Green solvents:types and reactions
19-Feb-25	Selective Methylation using dimethylcarbonate
22-Feb-25	do
Week-8	
26-Feb-25	Microwave assisted solvent free synthesis of copper phthalocyanine
27-Feb-25	do
5-Mar-25	Microwave assisted reactions in water: Hofmann Elimination,
Week-9	
6-Mar-25	methyl benzoate to benzoic acid.
8-Mar-25	Ultrasound assisted reactions:
12-Mar-25	sonochemical Simmons-Smith Reaction (Ultrasonic alternative to Iodine

Week-10	
13-Mar-25	Question answer
19-Mar-25	CLASS TEST
20-Mar-25	QUERIES
Week-11	
	UNIT-4
22-Mar-25	Future Trends in Green Chemistry:
26-Mar-25	do
27-Mar-25	Carbon sequestration and Ozone depletion
Week-12	
29-Mar-25	Oxidation reagents and catalysts
2-Apr-25	Zeolites
3-Apr-25	do
Week-13	
9-Apr-25	Biomimcry and green chemistry,
10-Apr-25	do
12-Apr-25	Oxidation reagents and catalysts;
Week-14	
16-Apr-25	Biomimetic multifuntional reagents
17-Apr-25	do
23-Apr-25	Multifunctional Reagents;
Week-15	
24-Apr-25	mechanochemical and solvent free synthesis of inorganic complexes;
26-Apr-25	co-crystal controlled solid state synthesis (C2S3);
30-Apr-25	Green chemistry for sustainable development.

GDC Memorial College, Bahal (Bhiwani)

NAAC Accredited Grade "B"

Lesson Plan- January to June 2025

Name- Mr.Krishan **Department-Chemistry**

Class- B.Sc **Subject-Organic Spectroscopy-II**

Semester- 6th **Subject Code- 20U-CHE-601**

Week-1	**UNIT-1**
1-Jan-25	Learning objective and outcome
2-Jan-25	Application of IR in structure elucidation of organic compounds
Week-2	
6-Jan-25	do
7-Jan-25	do
8-Jan-25	carbonyls and effect of substituents on it, C-H, N-H, O-H vibrations
9-Jan-25	do
Week-3	
13-Jan-25	H-bonding- unsaturated
15-Jan-25	do
16-Jan-25	do
Week-4	
20-Jan-25	mono- and disubstituted aromatic compounds
21-Jan-25	do
22-Jan-25	metal-ligand vibrations
23-Jan-25	do
Week-5	
27-Jan-25	group frequencies of complex ligands-CN stretching and effect of coordination on it,
28-Jan-25	do
29-Jan-25	do
30-Jan-25	do
Week-6	
3-Feb-25	nitro and nitrite and C=O ligands and effect of their coordination with metal ions
4-Feb-25	do
5-Feb-25	Applications of far and near IR
6-Feb-25	Class test
Week-7	**UNIT-2**
10-Feb-25	Basic principles of Nuclear Magnetic Resonance
11-Feb-25	do
12-Feb-25	chemical shift and its measurement,
13-Feb-25	do
Week-8	
17-Feb-25	factors influencing chemical shift
18-Feb-25	do
19-Feb-25	Spin-spin coupling

20-Feb-25	do
Week-9	
24-Feb-25	mechanism of nuclear spinspin interactions,
25-Feb-25	do
26-Feb-25	Different spin systems
27-Feb-25	do
Week-10	
3-Mar-25	coupling constant and factors effecting Coupling constant
4-Mar-25	do
5-Mar-25	Anisotropic effects in alkene, alkyne,
6-Mar-25	do
Week-11	
10-Mar-25	aldehydes and aromatics
11-Mar-25	do
12-Mar-25	do
Week-12	
17-Mar-25	Simplification of complex proton spectra with examples.
18-Mar-25	do
19-Mar-25	do
20-Mar-25	Class test
Week-13	**UNIT-3**
24-Mar-25	Interpretation of PMR Spectra of simple organic compounds.
25-Mar-25	do
26-Mar-25	do
27-Mar-25	Distinction between geometrical isomers.
Week-14	
31-Mar-25	do
1-Apr-25	basic principle, chemical shin and its calculations Applications of IR, UV
2-Apr-25	do
3-Apr-25	do
Week-15	
7-Apr-25	NMR for identification of simple organic molecules
8-Apr-25	do
9-Apr-25	do
10-Apr-25	Class test
Week-16	**UNIT-4**
14-Apr-25	Introduction, ion production - EI, Cl, FD and FAB,
15-Apr-25	do
16-Apr-25	factors affecting fragmentation, McLafferty rearrangement
17-Apr-25	do
Week-17	
21-Apr-25	Nitrogen rule
22-Apr-25	Mass spectral fragmentation of organic compounds having common functional groups.

23-Apr-25	do
24-Apr-25	Combined problems relating to structure elucidation by UV, IR
Week-18	
28-Apr-25	NMR Spectrpscopy and Mass Spectrometry
29-Apr-25	do
30-Apr-25	Class test
	Signature of Faculty

GDC Memorial College, Bahal (Bhiwani)

NAAC Accredited Grade "B"

Lesson Plan- January to June 2025

Name- Mr.Krishan **Department-Chemistry**

Class - B.Sc. Chemistry(M&NM) **Subject - Quntum mechnics & Mol. spectroscopy**

Semester- 6th **Subject Code- 20U-CHE-602**

Week-1	**UNIT-I Quantum Mechanics**
1-Jan-25	Black body and black body radiation
3-Jan-25	Planck's radiation law & Photoelectric effect and it's explanation using quantum theory
Week-2	
6-Jan-25	Heisenberg's uncertainty Principle
8-Jan-25	Compton effect
10-Jan-25	postulates of quantum mechanics operators and their commutation relation
Week-3	
13-Jan-25	Hermitian operator
15-Jan-25	Schrodinger wave equation for free particle
17-Jan-25	Schrodinger wave equation for particle in 1-D box & 3-D box
Week-4	
20-Jan-25	Average energy
22-Jan-25	Pictorial representation of wave equation and energy of particle in 1- D box
24-Jan-25	utility of particle in 1-D box & particle in 3-D box and degeneracy of energy level
Week-5	**UNIT-II Quantum Mechanics-II**
27-Jan-25	Rigid rotator moel of rotation of diatomic molecules
29-Jan-25	Schrodinger equation
31-Jan-25	transformation to spherical polar coordinates
Week-6	
3-Feb-25	seperation of variales
5-Feb-25	do
7-Feb-25	spherical harmonics
Week-7	
10-Feb-25	qualitative discussion of solution
12-Feb-25	revision
14-Feb-25	test
Week-8	**UNIT-III Molecular spectroscopy-I**
17-Feb-25	Introduction of rotational spectra
19-Feb-25	Rotational spectra of rigid diatomic molecule
21-Feb-25	do
Week-9	
24-Feb-25	intensities of rotational spectral lines non rigid rotator
28-Feb-25	spectra of polyatomic linear molecules
Week-10	
3-Mar-25	symmetric top molecules
5-Mar-25	isotopic substitution
7-Mar-25	Introduction of vibrational spectra Vibrating diatomic molecule
Week-11	
10-Mar-25	simple harmonic vibrator
12-Mar-25	anharmonicity overtones hot bands, P,Q,R branches

Week-12	
17-Mar-25	Interation of rotation and vibration
19-Mar-25	vibration of polyatomic molecules
21-Mar-25	Test
Week-13	**UNIT-IV Molecular spectroscopy-II**
24-Mar-25	Classical and quantum theory of raman spectra
26-Mar-25	Polarization of light and raman effect
28-Mar-25	Depolarization of Raman lines Pure rotational raman spectra of linear molecules
Week-14	
31-Mar-25	Vibrational raman spectra, Mutual exclusion principal
2-Apr-25	stokes and antistokes lines
4-Apr-25	Electronic spectra of diatomic molecules & rotational fine structyre of electronic band
Week-15	
7-Apr-25	Franck Condon Principle
9-Apr-25	fluorescence and phosphorescence
11-Apr-25	Dissociation and predissociation calculation of electronic transition using free electron model
Week-16	
14-Apr-25	classification of proteins
16-Apr-25	Peptide structure determination, End group analysis,
18-Apr-25	Selective hydrolysis of peptides, Classical peptides synthesis,
Week-17	
21-Apr-25	Structure of peptides and proteins-primary and secondary structure
23-Apr-25	do
25-Apr-25	Structure of peptides and proteins-primary and secondary structure
Week-18	
28-Apr-25	Presentation of Student
30-Apr-25	Class test
	Signature of Faculty