Teacher Name: Anuj
Class M.Sc. (P)
Semester- 1st
Session 2025-26
Paper: Physical Chemistry -1 Course Code: 25PN-CHE-102

Week	Topic
05.08.2025 to 09.08.2025	**U**nit **III :- Chemical Dynamics** Brief description of integrated rate laws of zero and first order
11.08.2025 to 16.08.2025	Brief description of integrated rate laws of second order and graphical representation
18.08.2025 to 23.08.2025	Lindemann Hinshewood treatment for unimolecular gas;
25.08.2025 to 30.08.2025	rate law for opposing reaction. Rate law for opposing reactions; parallel reaction
01.09.2025 to 06.09.2025	Rate law for consecutive reactions
08.09.2025 to 13.09.2025	Chain reactions
15.09.2025 to 20.09.2025	**UNIT-IV** Ion - Ion Interactions: The Debye-Huckel theory of ion- ion interactions, ionic cloud, Poisson's equation,
22.09.2025 to 27.09.2025	excess charge density, Linearization of Boltzmann equation
29.09.2025 to 04.10.2025	Linearized Poison Boltzmann equation and its solution, excess charge density and potential as a function of distance from central ion
06.10.2025 to 11.10.2025	Mid Term Exam
13.10.2025 to 18.10.2025	Debye Huckel reciprocal length ionic cloud and its contribution to the total potential
20.10.2025 to 25.10.2025	Deepawali vacation
27.10.2025 to 01.11.2025	Debye-Huckel limiting law of activity coefficients, its physical significance and its limitations, ion-size effect on potential,
03.11.2025 to 08.11.2025	ion-size parameter and the theoretical mean - activity coefficient in the case of ionic clouds with finite - sized ions.
10.11.2025 to 15.11.2025	Debye - Huckel -Onsager treatment for aqueous and non aqueous solutions and its limitations
17.11.2025 to 22.11.2025	Debye-Falkenhagen effect, Wein effect
24.11.2025 to 29.11.2025	Revision

Teacher Name: Sandeep kumar
Class M.Sc. Previous
Semester- 1st
Session 2025-26
Paper: Inorganic Chemistry-1 Course Code: 25PN-CHE-101

Week	Topic
05.08.2025 to 09.08.2025	Understand the concept of metal-ligand bonding in transition metal complexes by exploring theories
11.08.2025 to 16.08.2025	Crystal field theory, spectrochemical series
18.08.2025 to 23.08.2025	calculation of CFSE for low and high spin complexes of 3d-series elements, applications of CFSE,
25.08.2025 to 30.08.2025	limitations of crystal field theory,Jahn-Teller effect and its applications
01.08.2025 to 09.08.2025	ligand field theory, molecular orbital theory, M.O. diagrams of octahedra including both σ and π bonding
01.09.2025 to 06.09.2025	tetrahedral and square planar complexes including both σ and π bonding,
08.09.2025 to 13.09.2025	factors affecting Δ.
15.09.2025 to 20.09.2025	unit test
22.09.2025 to 27.09.2025	Isopoly and Heteropoly Acids and Salts of Mo & W:Isopoly acids and isopoly-ions, preparation and structure of paramolybdate and octamolybdate
29.09.2025 to 04.10.2025	heteropoly acids(only classification into six groups), Keggins's structure of 1:11 & 1:12–heteropoly acids and structure of 1:6 heteropoly acids and heteropoly blue
06.10.2025 to 11.10.2025	Mid term exam
13.10.2025 to 18.10.2025	Crystal Structures: Structures of some binary and ternary crystalline solid such as fluorite, anti-fluorit
20.10.2025 to 25.10.2025	Deepawali vacation
27.10.2025 to 01.11.2025	rutile, anti-rutile, crystobalite,
03.11.2025 to 08.11.2025	layered lattices – CdI2, BiI3, ReO3, Mn2O3,
10.11.2025 to 15.11.2025	NiAs, corundum, pervoskite, Ilmenite, calcite
17.11.2025 to 22.11.2025	normal spinel & inverse spinel minerals, Well equation and tolerance factor.
24.11.2025 to 29.11.2025	Revision

Teacher Name: Ravi Kant, Assistant Professor
Class M.Sc. (P) Organic Chemistry
Semester- 1st
Session 2025-26
Paper: Organic Chemistry -1 Course Code: 25PN-CHE-103

Week	Topic
05.08.2025 to 09.08.2025	Stereochemistry-I: Introduction to molecular symmetry and chirality.
11.08.2025 to 16.08.2025	D-L, R-S, E-Z and threo-erythro nomenclature,
18.08.2025 to 23.08.2025	D-L, R-S, E-Z and threo-erythro nomenclature,
25.08.2025 to 30.08.2025	interconversion of Fischer, Newman, Sawhorse and flying wedge formulae.
01.09.2025 to 06.09.2025	Conformational analysis of ethane, propane and butane
08.09.2025 to 13.09.2025	enantiomerism and diastereomerism of simple acyclic, cyclic system (chair and boat configuration),
15.09.2025 to 20.09.2025	fused and bridged bicyclic systems (decalins) and sugars.
22.09.2025 to 27.09.2025	Conformation and reactivity some examples. Optical activity in the absence of chiral carbon
29.09.2025 to 04.10.2025	biphenyls, allenes, ansa compounds, cyclophanes, hemispiranes and spiranes
06.10.2025 to 11.10.2025	Mid term exam
13.10.2025 to 18.10.2025	Stereochemistry of the compounds containing nitrogen, sulphur and phosphorus
20.10.2025 to 25.10.2025	Deepawali vacation
27.10.2025 to 01.11.2025	Stereochemistry-II: Topicity of ligands and faces, their nomenclature and prostereoisomerism, stereogenecity, chirogenicity, pseudoasymmetry and prochiralcentre.
03.11.2025 to 08.11.2025	stereospecific and stereoselective reaction.
10.11.2025 to 15.11.2025	Asymmetric synthesis (basic principle, auxiliary, substrate, reagent and catalyst controlled).
17.11.2025 to 22.11.2025	Asymmetric synthesis: Enantiomer excess, % enantioselectivity, optical purity, % diastereomeric excess and % diastereoselectivity.

Teacher Name: Deepak
Class M.Sc.
Semester- 1st
Session 2025-26
Paper: Physical Chemistry -1 Course Code: 25PN-CHE-102

Week	Topic
05.08.2025 to 09.08.2025	Introduction to quantum mechanics and its postulates
11.08.2025 to 16.08.2025	Quantum mechanical operators
18.08.2025 to 23.08.2025	Eigen function and eigen values, Hermitian operator
25.08.2025 to 30.08.2025	Angular momentum operator and their commutation relation
01.08.2025 to 09.08.2025	Ladder operator and is effect on angular momemtum operator
01.09.2025 to 06.09.2025	Schrodinger wave equation for particle in 1D box
08.09.2025 to 13.09.2025	Evaluation of average energy, average monemtum and average position
15.09.2025 to 20.09.2025	Derivation of uncertainity principle
22.09.2025 to 27.09.2025	Schrodinger wave equation for particle in 3D box
29.09.2025 to 04.10.2025	Revision
06.10.2025 to 11.10.2025	Mid term exam
13.10.2025 to 18.10.2025	**Thermodynamics**: First and 2nd law, Entropy change in reversible and irreversible process

20.10.2025 to 25.10.2025	Deepawali vacation
27.10.2025 to 01.11.2025	Variaton of entropy with T,P,V. Free energy function and their significance, Gibbs Duhum equation, variation of chemical potential with T,P,V
03.11.2025 to 08.11.2025	Law of mass action and its derivation, Classius-Clapeyron eqaution and its application
10.11.2025 to 15.11.2025	Phase diagram for two completly miscible component system, eutectic system
17.11.2025 to 22.11.2025	Phase diagram and thermodynamic treatment of solid solution
24.11.2025 to 29.11.2025	Revision

Teacher Name: Dr. Satish Kumar, Assistant Professor
Class M.Sc. P:
Semester- 1st
Session 2025-26
Paper: Analytical Chemistry Course Code 25PN-CHE-105

Week	Topic and ; ; ,
05.08.2025 to 09.08.2025	Introduction to Analytical Chemistry and Data Analysis
11.08.2025 to 16.08.2025	Role and Importance of Analytical Chemistry in various fields like Pharmaceutical, environmental
18.08.2025 to 23.08.2025	Role and Importance of Analytical Chemistry in various fields like food, clinical etc
25.08.2025 to 30.08.2025	Types of Analysis: Qualitative
01.08.2025 to 09.08.2025	Types of Analysis: Quantitative
01.09.2025 to 06.09.2025	Errors in Chemical Analysis; Confidence limits, standard deviation, variance;
08.09.2025 to 13.09.2025	Statistical treatment of analytical data- t-test,
15.09.2025 to 20.09.2025	F-test, and Q-test;
22.09.2025 to 27.09.2025	Calibration methods
29.09.2025 to 04.10.2025	Revision
06.10.2025 to 11.10.2025	Mid term exam
13.10.2025 to 18.10.2025	regression analysis
20.10.2025 to 25.10.2025	Deepawali vacation
27.10.2025 to 01.11.2025	Systematic and random errors
03.11.2025 to 08.11.2025	Accuracy, precision
10.11.2025 to 15.11.2025	significant figures
17.11.2025 to 22.11.2025	Problem solving
24.11.2025 to 29.11.2025	Revision

eacher Name: Sarita
Class : M.Sc. (P)
Semester- 1st
Session 2025-26
Paper: Organic Chemistry -I Course Code: 25PN-CHE-103

Week	Topic
01.08.2025 to 09.08.2025	Nature of Bonding in Organic molecules: Delocalized chemical bonding - conjugation, cross conjugation. Concept of aromaticity;
11.08.2025 to 16.08.2025	Hückel's rule, energy level of π-molecular orbitals, annulenes, antiaromaticity, homo-aromaticity.
18.08.2025 to 23.08.2025	Organic Reaction Mechanism: Structure and Reactivity: Types of mechanisms, types of reactions, Relationship between thermodynamic stability and rates of reactions - kinetic versus thermodynamic control of product formation – Hammond postulate
25.08.2025 to 30.08.2025	Potential energy diagrams, transition states and intermediates,
01.08.2025 to 09.08.2025	methods of determining mechanisms, guide lines for proposing reaction mechanism.
01.09.2025 to 06.09.2025	The Hammett equation and linear free energy relationship, substituent and reaction constants.
08.09.2025 to 13.09.2025	Reactive Intemediates: Generation, structure, stability and
15.09.2025 to 20.09.2025	Reactivity of reactive intermediates, Carbocations
22.09.2025 to 27.09.2025	carbonanions, Free Radicals
29.09.2025 to 04.10.2025	Carbenes, Nitrenes.
06.10.2025 to 11.10.2025	Mid term exam
13.10.2025 to 18.10.2025	Aliphatic Nucleophilic and Electrophilic Substitution: The SN1, SN2, mixed SN1 and SN2, SNi and SET mechanisms.
20.10.2025 to 25.10.2025	Deepawali vacation
27.10.2025 to 01.11.2025	The neighbouring group mechanisms, neighbouring group participation by p and s bonds, anchimeric assistance.
03.11.2025 to 08.11.2025	Classical and non-classical carbocations, phenonium ions, common carbocation rearrangements.
10.11.2025 to 15.11.2025	Reactivity- effects of substrate structure, attacking nucleophile, leaving group and reaction medium. Ambident nucleophile, regioselectivity. Phase transfer catalysis; The SE1

	mechanism, Bimolecular mechanisms- SE2 and SEi.,
17.11.2025 to 22.11.2025	Electrophilic substitution accompanied by double bond shifts. Effect of substrates, leaving group and the solvent polarity on the reactivity.
24.11.2025 to 29.11.2025	Revision

Teacher Name: Anuj (Assistant Professor)
Class M.Sc. 2nd year
Semester- 3rd semester
Session 2025-26

Week	Topic
01.08.2025 to 09.08.2025	Introduction to spectroscopy
11.08.2025 to 16.08.2025	Rotational spectra of rigid diatomic molecule
18.08.2025 to 23.08.2025	Intensities of rotational spectral lines, isotopic substitution, non-rigid rotator
25.08.2025 to 30.08.2025	Spectra of polyatomic linear molecules and symmetric top molecules
01.09.2025 to 06.09.2025	Introduction to vibrational spectroscopy, Vibrating diatomic molecule, force constant, zero point energy, simple harmonic vibrator
08.09.2025 to 13.09.2025	Anharmonicity, Morse Potential energy curve, overtones and hot bands
15.09.2025 to 20.09.2025	Interaction of rotation and vibrations, P,Q and R branches, Vibration of polyatomic molecules
22.09.2025 to 27.09.2025	Normal modes of vibrations, breakdown of Born Oppenheimer approximation, analysis by IR Technique
29.09.2025 to 04.10.2025	Applications of Rotational and vibrational spectroscopy
06.10.2025 to 11.10.2025	Mid term exam
13.10.2025 to 18.10.2025	Introduction to Raman Spectroscopy, classical and quantum theory of Raman Effect, Polarization of light and Raman effect, depolarization of Raman Lines
20.10.2025 to 25.10.2025	Deepawali vacation
27.10.2025 to 01.11.2025	Pure Rotational Raman spectra of linear molecules, vibrational raman spectra, rule of mutual exclusion, structure determination from Raman and IR spectra
03.11.2025 to 08.11.2025	Use of symmetry groups to determine selection rules and number of IR and Raman active lines in the spectra
10.11.2025 to 15.11.2025	Introduction to electronic spectroscopy, Electronic spectra of

	diatomic molecules
17.11.2025 to 22.11.2025	Vibrational coarse structure and rotational fine structure of electronic band
24.11.2025 to 29.11.2025	The Frank condon principle, intensity of vibrational electronic band, Dissociation energy

Teacher Name: Sandeep Kumar
Class M.Sc. Final,
Semester- 3rd
Session 2025-26
Paper:

Week	Topic
01.08.2025 to 09.08.2025	production of organometallic compound
11.08.2025 to 16.08.2025	classification of organometallic compound by Bond type ionic covalent electron deficient and cluster orgonometric compound
18.08.2025 to 23.08.2025	alkyl and aryll transition metal complex type and routs of synthesis
25.08.2025 to 30.08.2025	stability and decomposition pathway
01.08.2025 to 09.08.2025	organocopper in organic synthesis, fluxtional omc
01.09.2025 to 06.09.2025	nfluxionalit and dynamic equilibria in compound in eta2eta 3 ally complexl
08.09.2025 to 13.09.2025	carbonyl scrambling
15.09.2025 to 20.09.2025	Test
22.09.2025 to 27.09.2025	unit 2 stoichimertic chemistry reaction for catalyst homogeneous catalytic hydrogenation
29.09.2025 to 04.10.2025	fiydoscynation, hydrosilyation
06.10.2025 to 11.10.2025	Mid term exam
13.10.2025 to 18.10.2025	hydroformylation methanol carbonylation
20.10.2025 to 25.10.2025	Deepawali vacation
27.10.2025 to 01.11.2025	olefin oxidation monsanto cavita process
03.11.2025 to 08.11.2025	Ziegler Natta polymerization of olefin
10.11.2025 to 15.11.2025	catalytic reaction involving carbon monoxide
17.11.2025 to 22.11.2025	oxopalladation reaction activation of C-H bond
24.11.2025 to 29.11.2025	Revision

Teacher Name: MONIKA MANCHANDA
Class M.Sc. Final,
Semester- 3rd
Session 2025-26
Paper: Inorganic Chemistry Special -I Course code: 22CHE-302

Week	Topic
01.08.2025 to 09.08.2025	Transition metal pi comnplexes -INTRRODUCTION 1.ALKENES-Preparation ,properties,nature of bonding and structural features.
11.08.2025 to 16.08.2025	Important reactions related to nucleophilic and electrophilic attack on ligands and to organic synthesis.
18.08.2025 to 23.08.2025	2.ALKYNES--Preparation ,properties,nature of bonding and structural features.Importance reactions related to nucleophilic and electrophilic attack on ligands and to organic synthesis
25.08.2025 to 30.08.2025	3.ALLYL -Preparation ,properties,nature of bonding and structural features.Importance reactions related to nucleophilic and electrophilic attack on ligands and to organic synthesis
01.09.2025 to 06.09.2025	4. DIENES -Preparation ,properties,nature of bonding and structural features.Importance reactions related to nucleophilic and electrophilic attack on ligands and to organic synthesis
08.09.2025 to 13.09.2025	5.DIENYLS -Preparation ,properties,nature of bonding and structural features.Importance reactions related to nucleophilic and electrophilic attack on ligands and to organic synthesis
15.09.2025 to 20.09.2025	6. ARENES -Preparation ,properties,nature of bonding and structural features.Importance reactions related to nucleophilic and electrophilic attack on ligands and to organic synthesis
22.09.2025 to 27.09.2025	7. TRIENYLS-Preparation ,properties,nature of bonding and structural features.Importance reactions related to nucleophilic and electrophilic attack on ligands and to organic synthesis
29.09.2025 to 04.10.2025	INTRODUCTION TO THE COMPOUNDS OF TRANSITION METALS CARBON MULTIPLE BOND COMPOUNDS
06.10.2025 to 11.10.2025	Mid term exam
13.10.2025 to 18.10.2025	ALKYLIDIENES-Synthesis,nature of bond ,structural characteristics ,nucleophilic and electrophilic reactions on the ligands, role in organic synthesis.
20.10.2025 to 25.10.2025	Deepawali vacation
27.10.2025 to 01.11.2025	LOW VALENT CARBENES -Synthesis,nature of bond ,structural characteristics ,nucleophilic and electrophilic reactions on the ligands, role in organic synthesis.
03.11.2025 to 08.11.2025	ALKYLIDYNES-Synthesis,nature of bond ,structural characteristics ,nucleophilic and electrophilic reactions on the ligands, role in organic synthesis.

10.11.2025 to 15.11.2025	LOW VALENT CARBYNES-Synthesis,nature of bond ,structural characteristics ,nucleophilic and electrophilic reactions on the ligands, role in organic synthesis.
17.11.2025 to 22.11.2025	TRANSITION METAL COMPOUNDS WITH BONDS TO HYDROGEN .
24.11.2025 to 29.11.2025	Revision

Teacher Name: MONIKA MANCHANDA
Class M.Sc. Final,
Semester- 3rd
Session 2025-26
Paper: SPECTROSCOPY 2 Course code: 22CHE-301

Week	Topic
01.08.2025 to 09.08.2025	EPR SPECTRA- BASIC PRINCIPLES AND EXPERIMENTAL TECHNIQUES
11.08.2025 to 16.08.2025	g values , hyper fine splitting, instrummentation.
18.08.2025 to 23.08.2025	Applications to the study of free radicals and fast reactions,spin densities and mc connel relationships
25.08.2025 to 30.08.2025	Moss bauer spectroscopy- basic principles and specrtal parameters
01.09.2025 to 06.09.2025	Applications of techniques to the study of bonding and structure of Fe2+ and Fe3+ compounds
08.09.2025 to 13.09.2025	Applications of techniques to the study of bonding and structure of Sn2+ and Sn4+ compounds
15.09.2025 to 20.09.2025	Nature of M-L bond, structure and detectation of oxidation state
22.09.2025 to 27.09.2025	Atomic absorption spectra- intro
29.09.2025 to 04.10.2025	Basic principles and resonance lines and its natural width
06.10.2025 to 11.10.2025	Mid term exam
13.10.2025 to 18.10.2025	Doppler effect and broadening
20.10.2025 to 25.10.2025	Deepawali vacation
27.10.2025 to 01.11.2025	Hollow cathode lamp and application to alkali and alkaline earth metal
03.11.2025 to 08.11.2025	Flame photometric- theory , emission flame photometry
10.11.2025 to 15.11.2025	Intensity of spectral lines and applications of flame photometry
17.11.2025 to 22.11.2025	Spectroscopy and calorimetry- fundamental concepts, instrumentations
24.11.2025 to 29.11.2025	Applications of AAS and calorimetry to inorganic substances . revision

Teacher Name: Usha
Class : M.Sc
Semester- 3rd
Session 2025-26
Paper: Inorganic Chemistry special -III Course code: 22CHE-308

Week	Topic
01.08.2025 to 09.08.2025	Inorganic Polymer: Classification,types, vomparision
11.08.2025 to 16.08.2025	B-N, N-P polymers, silicones
18.08.2025 to 23.08.2025	Coordination polymers
25.08.2025 to 30.08.2025	Non aqueous solvent
01.08.2025 to 09.08.2025	Kinetics and mechanism of coordination reactions in non aqueous solvent
01.09.2025 to 06.09.2025	Isopoly and heteropoly acids and salts
08.09.2025 to 13.09.2025	Basics of Photochemistry
15.09.2025 to 20.09.2025	Principle and process in Photochemistry
22.09.2025 to 27.09.2025	Electrochemical reaction, general principles
29.09.2025 to 04.10.2025	Diffusion current, koutecky equation for diffusion current
06.10.2025 to 11.10.2025	Mid term exam
13.10.2025 to 18.10.2025	Polarography
20.10.2025 to 25.10.2025	Deepawali vacation
27.10.2025 to 01.11.2025	Polarography
03.11.2025 to 08.11.2025	Amperometric titrations and types of titration curves, apparatus and techniques
10.11.2025 to 15.11.2025	Square wave polarography, normal and differential pulse polarography
17.11.2025 to 22.11.2025	Chronopotentiometry and coulometry , anodic and cathodic stripping voltammetry
24.11.2025 to 29.11.2025	Revision