Lesson Plan

MCM DAV College for Women, Sector – 36A, Chandigarh
Monthly Teaching Plans (Odd Semester)
Session – (2026-27)

Name of the Teacher/s: Dr. Archana

Department: Chemistry

Class: M.Sc.II **Subject** Applications of Spectroscopy CH-511

S. No.	Date (Monthly)		Topics to be Covered	Academic Activity Undertaken*
	From	To		
1	18-07-2026	14-08-2026	Infrared Spectroscopy: Instrumentation and sample handling. Characteristics vibrational frequencies of alkanes, alkenes, alkynes, aromatic compounds, alcohols, ethers phenols and amines. Detailed study of vibrational frequencies of carbonyl compounds (ketones, aldehydes, esters amides acids, anhydrides, lactones, lactams and conjugated carbonyl compounds). Effect of hydrogen bonding of solvent effect on vibrational frequencies, overtones, combination bands and Fermi resonance. FT-IR of gaseous, solid and polymeric materials. Nuclear Magnetic Resonance Spectroscopy: General introduction and definition, chemical shift, spin interaction, shielding mechanism of measurement, chemical shift values and correlation for protons bonded to carbon (aliphatic,olefinic,aldehydic and aromatic) another nuclei (alcoholic, phenols, enols, carboxylic acids, amines, amides & mercaptan),chemical exchange.	Lecture Method, PPT and Group Discussion
2	15-08-2026	21-08-2026	Ultraviolet and Visible Spectroscopy: Various electronic transitions (185-800nm), Beer-Lambert law, effect of solvent on electronic transition, ultraviolet bands for carbonyl compounds, unsaturated carbonyl compounds, dienes, conjugated polyenes. Fieser- Woodward rules for conjugated dienes and carbonyl, ultraviolet spectra of aromatic and	Lecture Method and Online Sources

			heterocyclic compounds. Steric effect in biphenyls.	
3	22-08-2026	07-09-2026	Effect of deuteration, complex spin-spin interaction between two, three, four, five nuclei (first order spectra) virtual coupling, stereochemistry, hindered rotation, Karplus curve variation of coupling constant with dihedral angle. simplification of complex spectra-nuclear magnetic double resonance, contact shift reagents, solvent effects, Fourier transform technique, nuclear over hauser effect (NOE) resonance of other nuclei –F, P	
4	08-09-2026	15-09. 2026	NMR spectroscopy –COSY, NOESY, DEPT, APT and INADEQUATE technique.	Lecture Method, PPT and Group Discussion
5	16-09-2026	05-10-2026	Mossbauer Spectroscopy: Basic principles, spectral parameters and spectrum display. Application of the technique to the studies of (1) bonding and structures of Fe^{+2} and Fe^{+3} compounds including those of intermediate spin, (2) Sn^{+2} and Sn^{+4} compounds nature of M-L bond, coordination number, structure and (3) detection of oxidation state and inequivalent MB atoms.	Lecture Method, PPT) Case Studies and Online Sources
6	06-10-2026	15-10-2026	Electron Spin Resonance Spectroscopy: Hyperfine coupling, spin polarization for atoms and transition metal ions, spin orbit coupling and significance of g-tensors, application of transition metal complexes (having one unpaired electron) including biological systems and to inorganic free radicals such as PH_4, F_2 and $[BH_3]$.	Lecture Method, PPT and Group Discussion
7.	16-10-2026	23-10-2026	Nuclear Magnetic Resonance of Paramagnetic: Substances in Solution The contact and pseudo contact shifts, factors affecting nuclear relaxation Some applications including biochemical systems, an overview of NMR of metal nuclides with emphasis on 195 Pt and 119 Sn NMR.	Lecture Method, PPT and Online Sources
8.	24-10-2026	02-11-2026	Vibrational Spectroscopy: Symmetrey and shapes of AB_2, AB_3, AB_4, AB_5 and AB_6 mode of bonding of ambidentate ligands. Ethylenediamine and diketonato complexes, applications of	Lecture Method, PPT and Group Discussion

			resonance , Raman spectroscopy particularly for the study of active sites of metalloproteins	
9.	03-11-2026	Till exam	Mass Spectrometry: Introduction, ion production –EI, CI, FD and FAB, factors affecting fragmentation, ion analysis, ion abundance. Mass spectral fragmentation of organic compounds, common functional group, molecular ion peak, metastable peak, McLafferty rearrangement. nitrogen rule, high resolution mass spectrometry. Example of mass spectral fragmentation of organic compounds with respect to their structure determination.	Lecture Method, PPT and Group Discussion
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans				
26th August, 2026	The teachers have completed the scheduled chapters and topics as shown in the lesson plan			
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans				
30thSeptember, 2026	The teachers have completed the scheduled chapters and topics as shown in the lesson plan			
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans				
28th October, 2026	The teachers have completed the scheduled chapters and topics as shown in the lesson plan			
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans				
25th November, 2026	The teachers have completed the scheduled chapters and topics as shown in the lesson plan			

***Any of these** – (i) Lecture Method; (ii) PPT; (iii) Online Sources; (iv) Group Discussion; (v) Case Studies etc.Other Methods adopted by the teacher – Please write the specific teaching method

Lesson Plan

MCM DAV College for Women, Sector – 36A, Chandigarh
Monthly Teaching Plans (Even Semester)
Session – (2026-27)

Name of the Teacher/s: Dr. Swatika Sharma

Department: Chemistry

Class: M.Sc. II **Subject:** ENVIRONMENT CHEMISTRY

S. No.	Date (Monthly)		Topics to be Covered	Academic Activity Undertaken*
	From	To		
1	18-07-2026	15-08-2026	UNIT 1 Environment Introduction. Ccomposition of atmosphere, vertical temperature, heat budget of the Earth atmospheric system, vertical stability atmosphere. Biogeochemical cycles of C,N,P,S and O. Biodistribution of elements. Environmental Toxicology Chemical solutions to environmental problems, biodegradability, principles of decomposition ,better industrial processes. Bhopal gas tragedy.	Lecture method, Online sources
2	17-08-2026	12-09-2026	UNIT 2 Industrial Pollution Cement sugar, distillery, drug, paper, thermal power plants, nuclear Power plants, metallurgy. Polymers, drugsetc. Radionuclide analysis. Disposal of wastes and their management.and Minamata disasters. Soils	Lecture method

			Composition, micro and macro nutrients, pollution-fertilizers, pesticides, plastic and metals.	
3	14-09-2026	14-10-2026	UNIT 3 Hydrosphere Chemical composition of water bodies-lakes, streams, rivers and wet lands etc. Hydrological cycle. Aquatic pollution – inorganic, organic, pesticide, agricultural, industrial and Sewage, detergents, oil spills and oil pollutants. Water Quality parameters –Dissolved oxygen, biochemical oxygen demand, solids, metals, content of Chloride, sulphate, phosphate, nitrate and micro-organisms. Water quality Standards. Analytical methods for measuring BOD,DO,COD,F,Oils,metals (As,Cd,Cr, Hg,Pb,Se etc.), residual chloride and chlorine demand. Purification and treatment of water.	Lecture Method, Online Sources
4	15-10-2026	Till exam	UNIT-4 Atmosphere Chemical composition of atmosphere – particles, ions and redicals and their formation. Chemical and photochemical reactions in atmosphere, smog formation, oxides of Chlorofluorohydrocarbons, Ozone depletion, Global warming. Green house effect, acid rain, air pollution controls and their chemistry. Analytical methods for measuring air pollutants. Continuous monitoring instruments	Lecture Method, Online Sources

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Lesson Plan

MCM DAV College for Women, Sector – 36A, Chandigarh
Monthly Teaching Plans (Odd Semester)
Session – (2026-27)

Name of the Teachers: Dr. Manjot Kaur
Department: Chemistry

Class: M.Sc II **Subject:** Heterocyclic Chemistry (CH-513)

Date (Monthly)		**Topics to be Covered**	**Academic Activity Undertaken***
From	**To**		
18-07-2026	04-08-2026	UNIT 1: Nomenclature of Heterocycles Replacement and systematic nomenclature (Hantzsch-widman System) for monocyclic fused and bridged heterocycles Aromatic Heterocycles. General chemical behaviour of aromatic heterocycles classification (structural type) criteria of aromaticity (bond length ring current and chemical shift in H NMR- Spectra empirical resonance energy delocalization energy and Dewar resonance energy Diamagnetic susceptibility exaltations) Non- aromatic Heterocycles. Strain-bond angle and torsional strains and their consequences in small ring heterocycles.	Lecture Method & Group Discussion about Introduction to relevant reference books And marking system in final paper
05-08-2026	25-08-2026	UNIT 1: Nomenclature of Heterocycles Non- aromatic Heterocycles. Strain-bond angle and torsional strains and their consequences in small ring heterocycles. Conformation of six-membered heterocycles with reference to molecular Geometry, barrier to ring inversion, pyramidal inversion and 1,3-diaxial interaction. Stereo-electronic effects- anomeric and related effects Attractive interactions-hydrogen bonding and intermolecular nucleophilic electrophilic interactions.	Lecture Method & Case Studies. For Practice of nomenclature
26-08-2026	22.09.2026	. UNIT 2: Heterocyclic synthesis Principles of heterocyclic synthesis involving cyclization reactions and cycloaddition Reactions. Three- membered and four-membered heterocycles-synthesis and reactions of aziridines, oxiranes, thiiranes, azetidines, oxetanes and thietanes.	Lecture Method & Group Discussion for paper solving by giving Assignment

22.09.2026	Till Exam	UNIT 2: Heterocyclic synthesis Synthesis and reaction including medicinal applications of benzo pyrroles, benzofurans and benzothiophenes	Lecture Method & group Discussion. Revision and question papers discussion
18-07-2026	26-08-2026	UNIT 3: Meso-ionic Heterocycles General classification chemistry of some important meso-ionic heterocycles of type-A and B and their applications. Six-Membered Heterocycles with One Heteroatom Synthesis and reactions of pyrylium salt and pyrones and their comparison with Pyridinium & thiopyrylium salt and Pyridones synthesis and reactions of Quinolizinium and benzopyrylium salt coumarins and chromones Six-Membered Heterocycles with Two or More Heteroatoms: Synthesis and reactions of diazines, triazines, tetrazines and thiazine	
26-08-2026	22-09-2026	Unit 4: 1,2-Azoles: pyrazoles, isothiazoles and isoxazoles Introduction to 1,2-azoles, synthesis of 1,2-azoles. Addition on nitrogen: protonation, N-alkylation, N-acylation. Reaction with electrophilic and nucleophilic reagents. Reaction with bases: reaction of N-metallated pyrazole, reaction of C-metallated 1,2-azoles. Reaction with oxidizing and reducing agents	
22-09-2026	Till exams	Unit 4: 1,3-Azoles: imidazole, thiazoles and oxazoles Introduction to 1,3-azoles, synthesis of 1,3-azoles. Addition at nitrogen: protonation, N-alkylation, N-acylation. Reaction with electrophilic and nucleophilic reagents. Reaction with bases: reaction of N-metallated imidazole, reaction of C-metallated 1,3-azoles. Reaction with oxidizing and reducing agents. Synthesis and reaction of quaternary 1,3-azolium salt and 1,3-azole-N-oxide.	

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Lesson Plan

MCM DAV College for Women, Sector – 36A, Chandigarh
Monthly Teaching Plans (Odd Semester)
Session – (2026-27)

Name of the Teacher/s: Dr. Shilpa Dogra
Department: Chemistry

Class: MSc II **Subject:** Organometallic Chemistry

S.No.	Date (Monthly)		Topics to be Covered	Academic Activity Undertaken*
	From	To		
1	18-07-2026	15-08-2026	Basic Reactions: Oxidative Addition, Reductive elimination, Migratory Insertion, Beta hydride elimination. 18 electron Rule, Metal Carbonyl complexes	Lecture Method and Online Sources
			Homogeneous Catalysis Stoichiometric reaction for catalysis, homogeneous catalytic hydrogenation.	Lecture Method, Online Sources and Group discussions
2	17-08-2026	12-09-2026	Alkyls and Aryls of Transition Metals Types, routes of synthesis, Stability and decomposition Pathways, organocopper in Organic Synthesis	Lecture Method, Group discussions and assignments
			Transition Metal Compounds with Bonds to Hydrogen Transition metal Compounds with bonds to hydrogen	Lecture Method, Class seminars, Unit test
3	14-09-2026	14-10-2026	Compounds of Transition Metal Carbon multiple Bonds Alkylidenes, alkylidynes, low valent Carbenes and carbynes-Synthesis, nature of bond, Structural Characteristics, nucleophilic and Electrophilic reaction on the ligands, role in organic synthesis	Lecture Method and Diagrammatic Representations
4.	15-10-2026	Till exam	Transition Metal Complexes of alkenes, alkynes, allyls Transition Metal Complexes with unsaturated Organic molecules,	Lecture Method and Diagrammatic Representations

			alkenes, alkynes, Allyl, diene, dienyl, arene and trienyl complexes, preparations, properties, nature of bonding and structural features important reactions relating to nucleophilic and electrophilic attack on ligands and to organic synthesis	
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***Any of these** – (i) Lecture Method; (ii) PPT; (iii) Online Sources; (iv) Group Discussion; (v) Case Studies etc. Other Methods adopted by the teacher – Please write the specific teaching method

MCM DAV College for Women, Sector – 36A, Chandigarh
Monthly Teaching Plans (Even Semester)
Session – (2026-27)

Name of the Teacher/s: Dr. Swatika Sharma (tentative)

Department: Chemistry

Class: M.Sc. II **Subject:** Natural Products

S.No.	Date (Monthly)		Topics to be Covered	Academic Activity Undertaken*
	From	To		
1	15.01.2027	15.02.2027	**Unit 1: Terpenoids and Carotenoids** Classification, nomenclature occurrence isolation general methods of structure determination, isoprene rule. Structure determination stereochemistry, Biosynthesis and synthesis of : citral, Terpeneol, Farnesol, , phytol, Abietic Acid and Beta- Carotene.	Lecture method PPT Group Discussion
2	16.02.2027	03.03.2027	**Unit-II:<u>Alkaloids</u>**: Definition, nomenclature and physiological action occurrence isolation general method of structure elucidation degradation classification based on nitrogen heterocyclic ring role of alkaloids in plants. Structure stereochemistry, synthesis and biosynthesis of: Ephedrin,Conine,	Lecture method PPT Group Discussion

			Nicotine, Atropine, Quinine.	
3	04.03.2027	24.03. 2027	**Unit-III: Steroids** Occurrence nomenclature basic skeleton. Diel's hydrocarbon and Stereochemistry, isolation, structure determination and synthesis of: Cholesterol, Bile acids, Androsterone, Testosterone, Estrone, Progestrone, Aldosterone, Biosynthesis of steroids.	Lecture method PPT Group Discussion
4	25-03-2027	Till exam	**Unit-IV: Plant pigments** Occurrence nomenclature and general methods of structure determinations, isolation and synthesis of: Quercetin, Quercetin-3-Glucoside, Vitexin, Diadzein, Cyanidin-7-arabinoside, cyanidine, Hirsutidin. Biosynthesis of Flavonoids: Acetate pathway and shikimic acid pathway. Porphyrins: structure and synthesis of haemoglobin and chlorophyll Prostaglandins: Occurence , nomenclature biogenesis and synthesis of: PGE2 and PGF2 Synthesis and reaction of Pyretheroids and Rotenones.	Lecture method PPT Group Discussion
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans				
27-01-2027	The teachers have completed the scheduled chapters and topics as shown in the lesson plan			
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans				

24-02-2027	The teachers have completed the scheduled chapters and topics as shown in the lesson plan
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31-03-2027	The teachers have completed the scheduled chapters and topics as shown in the lesson
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Other Methods adopted by the teacher – Please write the specific teaching method

MCM DAV College for Women, Sector – 36A, Chandigarh
Monthly Teaching Plans (Even Semester)
Session – (2026-27)

Name of the Teachers: Dr. Archana (tentative)

Department: Chemistry

Class: M.Sc II **Subject:** Organic Synthesis I (CH-522)

Sr. No.	Date (Monthly)		Topics to be Covered	Academic Activity Undertaken*
	From	To		
1	15.01.2027	15.02.2027	**Rearrangements** (15 Hrs.) General mechanistic considerations-nature of migration, migratory aptitude, memory effects A detailed Study of the following rearrangements Pinacol-pinacolone, Wagner-Meerwein, Demjanov, Benzil-Benzilic Acid, Favorskii, Arndt Eistert synthesis, Neber, Beckmann, 55 Hofman, Curtius, Schmidt, Baeyer- Villiger, Shapiro reaction.	Lecture method PPT Group Discussion
2	16.02.2027	27.02.2027	**Oxidation (7 Hrs.)** Introduction . Different oxidative Processes Hydrocarbon-alkenes, aromatic rings, saturated C-H groups(activated and Unactivated) Alcohols, diols, aldehybes, ketones, ketals and carboxylic acids, amines, hydrazines, and sulphides. Oxidation with ruthenium tetaoxide, iodobenzene diacetate and Thallium(III) nitrate.	Lecture method PPT Group Discussion
3	01.03.2027	13.03. 2027	**Unit IV: Reduction** Introduction Different reductive processes Hydrocarbons-alkanes, alkenes, alkynes and	Lecture method Group Discussion **Assignment given**

			aromatic rings carbonyl compounds-aldehydes, ketones, acids and their derivatives	Lecture method Presentation using OHP Presentation by students
4	15.03.2027	31.03.2027	**Unit I: Organometallic Reagents** Principle, Preparations, of the Organolithium and organomagnesium compounds in organic synthesis with mechanistic details Unit II Organic Synthesis: Introduction to Retrosynthesis, Electrophilic substitution reactions, Discussion of possible retrosynthesis routes of a target molecule and their comparison, Latent polarity, Linear and Convergent synthesis, Umpolung and synthesis of cyclic molecules.	Lecture method PPT Group Discussion
5	01.04.2027	26.04.2027	Unit I: properties and applications Organolithium and organomagnesium compounds: Hg, Zn and Ce Compounds Transition metals: Cu, Pd, Ni, Fe, Co, Rh, Cr and Ti Compounds Unit II Organic Synthesis: Functional Group Interconversions (FGIs), Retrosynthesis: Strategy and Planning, Practice examples elucidating all principles, Chemoselectivity, protecting groups laying more emphasis on protection of carbonyl groups, alcohols and amines. Protection of just one of two identical	Lecture method Group Discussion

			groups. How to avoid the use of protecting groups and its advantages and disadvantages. Regioselectivity, Methods for the preparation of alkenes, regioselective additions to alkenes, ketones, nucleophilic addition to α, β-unsaturated carbonyl compounds, nucleophilic addition to epoxides, Oxidation of ketones to esters and Practice examples	
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24-02-2027	The teachers have completed the scheduled chapters and topics as shown in the lesson plan			
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***Any of these** – (i) Lecture Method; (ii) PPT; (iii) Online Sources; (iv) Group Discussion; (v) Case Studies etc.Other Methods adopted by the teacher – Please write the specific teaching method

Lesson Plan

MCM DAV College for Women, Sector – 36A, Chandigarh
Monthly Teaching Plans (Even Semester)
Session – (2026-27)

Name of the Teacher/s: Dr. Shilpa Dogra (tentative)

Department: Chemistry

Class: MSc II **Subject:** Biophysical Chemistry

S.No.	Date (Monthly)		Topics to be Covered	Academic Activity Undertaken*
	From	To		
1	15.01.2027	15.02.2027	Biological Cell and its Constituents Biological cell, DNA and RNA in living systems. Basic consideration. Proximity effects and molecular adaptation	Lecture Method and Online Sources
			Bioenergetics and ATP cycle Standard free energy change in biochemical reaction, exergonic, endergonic reactions. Hydrolysis of ATP, sythesis of ATP from ADP, metal complexes and transition of energy, chlorophyls, photo system I and photo system II in cleavage of water	Lecture Method, PPT, Assignments, Unit test
2	16.02.2027	03.03.2027	Enzymes, Mechanism of Enzyme Action Introduction and historical perspective, chemical and biological catalysis, Remarkable properties of enzymes like catalytic power, specificity and regulation. Nomenclature and classification, extraction and purification. Fischer's lock and key and Koshland's induced fit hypothesis, concept and identification of active site by the use of inhibitors, affinity labeling and enzyme modification by site-directed mutagenesis. Enzyme kinetics, Michaelis-Menten	Lecture Method, Group discussions and assignments

			and Lineweaver-Burk plots, reversible and irreversible inhibition.	
			Thermodynamics of biopolymer solutions, Cell membranes and transport of ions Thermodynamics of biopolymes solutions, osmotic pressure, membrane equilibrium, muscular contraction and engery generations in mechanochemical system. Structure and function of cell membrane, ion transport through cell membrane, Na+ /K+ Pump. Irreversible treatment of membrane transport. Nerve conduction.	Lecture Method, PPT, Group discussions
3	04.03.2027	24.03. 2027	Kinds of reactions Catalysed by Enzymes, Co-enzyme Chemistry Nucleophilic displacement on a phosphorus atom, multiple displacement reactions and the coupling of ATP cleavage to endergonic processes. Transfer of sulphate, addition and elimination reaction, enolic intermediates in isomerization reactions, β-cleavage and condensation, some isomerization and rearrangement reactions. Enzyme catalyzed carboxylation and decarboxylation Cofactors as derived from vitamins, coenzymes, prosthetic groups, apoenzymes. Structure and biological function of coenzyme A, thiamine pyrophosphate, Pyridoxal phosphate, NAD+, NADP+, FMN, FAD, lipoic acid, vitamin B12. Mechanism of reaction catalyzed by the above cofactors	Lecture Method and Diagrammatic Representations

			Biological macromolecules, interactions & structural transitions Nucleotide, torsion angles in poly nucleotide chains, the helical structure of polynucleic acids, high order structure in polynucleotides. Basic principles of interaction between molecules, water structure and its interaction with biomolecules, dipole interactions, side chain interactions, electrostatic interactions, base pairing in nucleic acids, base stacking, hydration and the hydrophobic effect. Coil – helix transitions in proteins, statistical methods for predicting protein secondary structures; melting and annealing of polynucleotide duplexes, helical transitions in double stranded DNA, super coil dependent DNA transitions predicting helical structures in genomic DNA.	Lecture Method, PPT, Assignments, Unit test
4	25-03-2027	Till exam	Biological Macromolecules, Proteins Basic features of macromolecules, their configurations and conformations. Amino acids, the unique protein sequence, secondary structures of proteins, helical symmetry, effect peptide bond on protein conformations, the structure of globular proteins.	Lecture Method Diagrammatic Representations, Referred many books
			Separation & Characterization of biological macromolecules Sedimentation, moving boundary sedimentation, zonal sedimentation, general principles of electrophoresis, electrophoresis of proteins and nucleic acids, capillary electrophoresis.	Lecture Method, PPT, Class seminars by students
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Lesson Plan

MCM DAV College for Women, Sector – 36A, Chandigarh
Monthly Teaching Plans (Even Semester)
Session – (2026-27)

Name of the Teacher/s: NT (tentative)

Department: Chemistry

Class: M.Sc. II **Subject:** Photochemistry & Solid-State Chemistry

S. No.	Date (Monthly)		Topics to be Covered	Academic Activity Undertaken*
	From	To		
1	15.01.2027	15.02.2027	Unit 3: Solid state Chemistry Solid state reactions: general principles, experimental procedures, co-precipitation as a precursor to solid state reactions, kinetics of solid-state reactions. Organic Solids: Electrically conducting solids, organic charge transfer complexes, organic metals, new superconductors.	Lecture method, Online sources
2	16.02.2027	03.03.2027	Crystal defects and non-stoichiometry: Perfect and imperfect crystals, intrinsic and extrinsic defects-point defects, line defects, vacancies-Schottky defects and Frenkel defects, Thermodynamics of Schottky defects and Frenkel defect formation, Colour Centres, non-stoichiometry and defects.	Lecture method
3	04.03.2027	24.03. 2027	Unit 4 Electronic properties and Band Theory Metals, insulators and semiconductors, electronic structure of solids-band theory of metals, insulators and semiconductors, intrinsic and	Lecture Method, Online Sources

			extrinsic semiconductors, doping semiconductors, p-n junctions, superconductors.	
4	25-03-2027	Till exam	Optical properties-Optical reflectance, photoconduction-photoelectric effects. Magnetic properties-Classification of materials: Quantum theory of paramagnetic- cooperative phenomena-magnetic domains, hysteresis.	Lecture Method
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