राजकीय महाविद्यालय, महेन्द्रगढ़
GOVERNMENT COLLEGE, MAHENDERGARH
Accredited by NAAC with "B" grade and Affiliated to I.G. University, Meerpur (Rewari)

LESSON PLAN ODD SEMESTER

(FOR THE SESSION 2025-2026)

Name	**Dr. Manju Kumari**
Class	**M.Sc. 1st Semester**
Subject	**Green Chemistry**

Week Dates	Unit	Topics
11.08.2025 – 16.08.2025	I	History of emergence of Green Chemistry, Definition, Need and role of Green Chemistry, Principles and concepts of green chemistry synthesis: Chemistry in the context of sustainable development, Green Chemistry vs Environmental Chemistry, End of pipe vs Cleaner production
18.08.2025 – 23.08.2025	I	Current status and future perspective of Green Chemistry, The twelve principles of Green Chemistry with examples
25.08.2025 – 30.08.2025	I	Evaluation of Greenness, Environmental factor, Atom Economy; Calculation of atom economy for rearrangement, addition, substitution, and elimination reactions
01.09.2025 – 06.09.2025	II	Introduction to Catalysis, Homogeneous and Heterogeneous catalysis, Phase-transfer catalysis and Biocatalysis
08.09.2025 – 13.09.2025	II	Photocatalysis and Catalysis for Green Chemistry with examples
15.09.2025 – 20.09.2025	II	Renewable raw materials, Chemical products based on renewable sources
22.09.2025 – 27.09.2025	II	Alternative Green solvents, Volatile organic compounds (VOCs), Supercritical fluids
29.09.2025 – 04.10.2025	III	Green technology and sources of alternative energy; Photochemical and Electrochemical reactions
06.10.2025 – 11.10.2025	III	Green photo-chemical reactions; Green Chemical Reactions under Microwave (Microwave Assisted Synthesis)
13.10.2025 – 18.10.2025	III	Role of Sonication and Ball milling in Green chemical synthesis with examples
19.10.2025 – 26.10.2025		VACATIONS DIWALI
27.10.2025 – 01.11.2025	III	Flow techniques and role of Flow chemistry for sustainable development
03.11.2025 – 08.11.2025	Revision	Revision of Unit I and Unit II topics with problem-solving (Atom Economy, Catalysis examples, etc.)
10.11.2025 – 15.11.2025	Revision	Revision of Unit III topics, practical applications, and case studies
17.11.2025 – 22.11.2025	Mock Tests	Practice questions covering all units with CLO-based exercises
23.11.2025 – 01.12.2025	Final Review	Complete syllabus recapitulation, sample papers, Q&A sessions, and feedback

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LESSON PLAN ODD SEMESTER

(FOR THE SESSION 2025-2026)

Name	**Dr. Manju Kumari**
Class	**B.Sc. 3rd Semester**
Subject	**Chemistry**

Week Dates	Section	Topics
01.08.2025 – 09.08.2025	I	Salient features of hydrides, oxides, halides, hydroxides of s-block elements (methods of preparation excluded)
11.08.2025 – 16.08.2025	I	Structure, preparation and properties of Diborane and Borazine; Catenation, carbides, fluorocarbons, silicates (structural aspects)
18.08.2025 – 23.08.2025	I	Structure of oxides of Nitrogen and Phosphorous, white and red phosphorus; Structure of oxyacids of Nitrogen, Phosphorous, Sulphur, and Chlorine; comparison of acidic strength
25.08.2025 – 30.08.2025	I	Low chemical reactivity of noble gases, chemistry of xenon, structure and bonding in fluorides, oxides and oxyfluorides of xenon
01.09.2025 – 06.09.2025	II	Electrolytic conduction, factors affecting it, specific, molar, and equivalent conductance; relation among them, variation with concentration
08.09.2025 – 13.09.2025	II	Application of Kohlrausch's Law (numericals); Concepts of pH and pKa; Buffer solutions; Buffer action, Henderson–Hasselbalch equation, mechanism
15.09.2025 – 20.09.2025	II	Reversible & irreversible cells; Calculation of thermodynamic quantities (▲G, ▲H, K); Types of electrodes; Nernst equation
22.09.2025 – 27.09.2025	II	Standard Hydrogen electrode, reference electrodes, Applications of EMF measurement in solubility product, potentiometric titrations using glass electrode
29.09.2025 – 04.10.2025	III	Alkynes: nomenclature, structure, formation using calcium carbide, dehydrohalogenation, Kolbe's electrolysis
06.10.2025 – 11.10.2025	III	Chemical reactions of alkynes: electrophilic and nucleophilic addition, formation of metal acetylides, bromination, alkaline $KMnO_4$, ozonolysis, acidity
13.10.2025 – 18.10.2025	III	Stereochemistry: isomerism, structural and stereoisomerism, symmetry elements, enantiomers, optical activity, chiral/achiral molecules (up to 2 asymmetric centres), diastereomers, threo/erythro nomenclature
19.10.2025 – 26.10.2025		VACATIONS DIWALI
27.10.2025 – 01.11.2025	III	Meso-compounds, relative/absolute configuration, sequence rules, R and S nomenclature, Cis-Trans, E/Z, conformational analysis of ethane, n-butane, cyclohexane
03.11.2025 – 08.11.2025	IV	Benzene and derivatives: nomenclature, aromatic nucleus & side chains, Huckel's rule, electrophilic substitution mechanisms (nitration, halogenation, sulphonation, Friedel–Crafts), energy profile diagrams
10.11.2025 – 15.11.2025	IV	Activating/deactivating substituents, orientation; Alkyl halides: nomenclature, methods of formation, nucleophilic substitution (SN1, SN2) with energy profiles
17.11.2025 – 22.11.2025	IV	Aryl halides: formation via halogenation, Sandmeyer reaction, addition-elimination and elimination-addition mechanisms, relative reactivities vs alkyl, allyl, vinyl halides
23.11.2025 – 01.12.2025	V	Revision

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