LESSON PLAN - KUSUM

GOVT. P.G. COLLEGE BHUNA (FATEHABAD)
Lesson Plan (July 2025 to November 2025)

Name of the Assistant/ Associate Professor : Ms. Kusum
Class and Section: BSc in Physical Science
Subject : DSc Chemistry

Date	Week	Topic
24.7.2025 TO 26.7.2025	1st	**Unit-I** **Atomic Structure ,** Dual behaviour of matter and radiation, de Broglie's relation,
31.7.2025 TO 2.8.2025	2nd	Heisenberg's uncertainty principle, concept of atomic orbitals, significance of quantum numbers,
7.8.2025 TO 9.8.2025	3rd	Radial and angular wave functions, normal and orthogonal wave functions,
14.8.2025 TO 16.8.2025	4th	Significance of ψ and ψ^2, shapes of s, p, d and f orbitals, rules for filling electrons in various orbitals, effective nuclear charge, Slater's rules
21.8.2025 TO 23.8.2025	5th	**Periodic Table and Atomic Properties,** Classification of periodic table, definition of atomic and ionic radii, ionization energy, electron affinity and electronegativity, trends in periodic table (in s and p block elements),
28.8.2025 TO 30.8.2025	6th	Pauling, Mulliken, Allred Rachow and Mulliken Jaffe's electronegativity scale.
4.9.2025 TO 6.9.2025	7th	Unit-2 , **Gaseous State** Kinetic theory of gases, Maxwell's distribution of velocities and energies (derivation excluded), Calculation of root mean square velocity,
11.9.2025 TO 13.9.2025	8th	Average velocity and most probable velocity. Collision diameter, collision frequency and mean free path (derivation excluded), Deviation of real gases from ideal gas behaviour,
18.9.2025 TO 20.9.2025	9th	Derivation of van der Waal's equation of state, its applications in the calculation of Boyle's temperature (compression factor), Explanation of behaviour of real gases using van der Waal's equation
25.9.2025 TO 27.9.2025	10th	**Solid State,** Classification of solids, Elements of symmetry and symmetry elements of crystals, definition of unit cell and space lattice,
02.10.2025 TO 4.10.2025	11th	Bravais lattices, crystal system, Laws of crystallography Law of constancy of interfacial angles, law of rationality of indices and law of

		symmetry.
9.10.2025 TO 11.10.2025	12th	Miller Indices X-ray diffraction by crystals, derivation of Bragg's law and Bragg's equation, Determination of crystal structure of NaCl and KCl.
16.10.2025 TO 18.10.2025	13th	**UNIT-3, General Organic Chemistry,** Localized and Delocalized chemical bond, van der Waal's interactions, resonance and its conditions and applications, hyperconjugation, inductive effect, electromeric effect and their comparison.unit test
30.10.2025 TO 1.11.2025	14th	**Stereochemistry of Organic Compounds** Types of isomerism, optical isomerism - elements of symmetry, molecular chirality, chiral and achiral molecules with two stereogenic centres, enantiomers and their properties, diastereomers and their properties, erythro and threodiastereomers, meso compounds, Assignment
6.11.2025 TO 8.11.2025	15th	Difference between conformations and configurations, Newmann and Sawhorse projections, Fischer and Flying wedge configurations
13.11.2025 TO 15.11.2025	16th	Conformational isomerism – conformational analysis of ethane and n-butane, conformations of cyclohexane, unit test
20.11.2025 TO 22.11.2025	17th	Relative and absolute configurations, sequence rules, R & S systems of nomenclature Geometric isomerism – cis, trans isomerism, E & Z system of nomenclature

Kusum
Dept. of Chemistry
Govt. P. G. College, Bhuna

GOVT. P.G. COLLEGE BHUNA (FATEHABAD)
Lesson Plan (July 2025 to November 2025)

Name of the Assistant/ Associate Professor : Ms. Kusum
Class and Section: BSc in Physical Science
Subject : Skill Chemistry

Date	Week	Topic
28.7.2025 TO 30.7.2025	1st	**UNIT-I,** Review of energy sources (renewable and non-renewable). Classification of fuels and their calorific value.
04.8.2025 TO 6.8.2025	2nd	Determination of calorific value by Bomb calorimeter and Junker's calorimeter.
11.8.2025 TO 13.8.2025	3rd	**Coal:** Analysis of coal, Proximate and ultimate Analysis, Uses of coal (fuel and nonfuel) in various industries, its composition,
18.8.2025 TO 20.8.2025	4th	Coal gas, producer gas and water gas composition and uses.
25.8.2025 TO 27.8.2025	5th	Fractionation of coal tar, uses of coal tar-based chemicals, requisites of a good metallurgical coke,
31.8.2025 TO 02.9.2025	6th	Coal gasification (Hydrogasification and Catalytic gasification), Coal liquefaction and Solvent Refining.
9.9.2025 TO 10.9.2025	7th	**Petroleum and Petrochemical Industry:** Composition of crude petroleum,
15.9.2025 TO 17.9.2025	8th	Refining and different types of petroleum products and their applications.
22.9.2025 TO 24.9.2025	9th	Fractional Distillation (Principle and process), Cracking (Thermal and catalytic cracking), Product.
29.9.2025 TO 01.10.2025	10th	Reforming Petroleum and non-petroleum fuels (LPG, CNG, LNG, bio-gas, fuels derived from biomass),
06.10.2025 TO 8.10.2025	11th	Fuel from waste, synthetic fuels (gaseous and liquids), Unit test
13.10.2025 TO 15.10.2025	12th	Clean fuels. Petrochemicals: Vinyl acetate, Assignment
27.10.2025 TO 29.10.2025	13th	Propylene oxide, Isoprene, Butadiene,
3.10.2025 TO 5.11.2025	14th	Toluene and its derivatives Xylene. Assignmen
10.11.2025 TO 12.11.2025	15th	**UNIT III (Practical),** To prepare chart of calorific value of different fuel, To determine the viscosity of biodiesel at various temperature.
17.11.2025 TO 19.11.2025	16th	3. To determine free fatty acid content in given sample. 4. To determine the density of the given fuel sample.
24.11.2025 TO 26.11.2025	17th	5. Simple Test Method (Density, Filter Paper Test) of Petroleum

Kusum
Dept. of Chemistry
Govt. P. G. College, Bhuna

GOVT. P.G. COLLEGE BHUNA (FATEHABAD)
Lesson Plan (July 2025 to November 2025)

Name of the Assistant/ Associate Professor : Ms. Kusum
Class and Section: BCOM, BA, 1ST SEM
Subject : MDC Chemistry

Date	Week	Topic
24.7.2025 TO 26.7.2025	1st	**UNIT-I, Atomic Structure Concept of Bonding** (1-20) Introduction, Elementary introduction of atomic structure, Representation of elements/ atoms
31.7.2025 TO 2.8.2025	2nd	Bhor Model, Lewis's dot structure, electronic configurations,
7.8.2025 TO 9.8.2025	3rd	Types of Bonding **Carbon and its Compounds** Introduction, Tetravalency of Carbon,
14.8.2025 TO 16.8.2025	4th	Allotropes of carbon and their properties, hydrocarbons (1-5), Nomenclature (linear compounds), Assignment
21.8.2025 TO 23.8.2025	5th	**UNIT-II –Polymers** Introduction, elementary idea of polymer,
28.8.2025 TO 30.8.2025	6th	Types of polymers: Natural, synthetic, semi-synthetic Homo polymers and copolymers,
4.9.2025 TO 6.9.2025	7th	Uses of polymer (Natural rubber, Vulcanized rubber, Polyethene, PVC, Styrene, Teflon, PAN, Nylon-66), unit test
11.9.2025 TO 13.9.2025	8th	**Food Preservatives** Elementary idea of natural and synthetic food preservatives,
18.9.2025 TO 20.9.2025	9th	rancidity, uses and properties,
25.9.2025 TO 27.9.2025	10th	Different food preservation processes (pickle, Jam),
02.10.2025 TO 4.10.2025	11th	Artificial sweeteners, uses and properties, Assignment
9.10.2025 TO 11.10.2025	12th	Applications of hydrocarbons., unit test
16.10.2025 TO 18.10.2025	13th	Ionization Energy, Electron Affinity Electro Negativity,
30.10.2025 TO 1.11.2025	14th	**UNIT III (Practical) Basic information about practical**
6.11.2025 TO 8.11.2025	15th	**UNIT III (Practical)** **Practicals,** Preparation of solution of different concentration.
13.11.2025 TO 15.11.2025	16th	Identify the pH of the given samples through pH strip/pH meter.
20.11.2025 TO 22.11.2025	17th	Experiments related to persevering food items. To synthesize some polymers as per available resources

Kusum

Dept. of Chemistry
Govt. P. G. College, Bhuna

GOVT. P.G. COLLEGE BHUNA (FATEHABAD)
Lesson Plan (July 2025 to November 2025)

Name of the Assistant/ Associate Professor : Ms. Kusum
Class and Section: BSc Non Medical, 5th sem
Subject : Chemistry

Date	Week	Topic
28.7.2025 TO 30.7.2025	1st	UNIT-I, Metal- Ligand Bonding in Transition Metal complexes Limitations of valence bond theory, an elementary idea of crystal field theory,
04.8.2025 TO 6.8.2025	2nd	Crystal field splitting in octahedral, tetrahedral and square planer complexes,
11.8.2025 TO 13.8.2025	3rd	Factors affecting the crystal field parameters. Thermodynamics and Kinetic Aspects of metal complexes
18.8.2025 TO 20.8.2025	4th	A brief outline of thermodynamic stability of metal complexes and factors affecting the stability
25.8.2025 TO 27.8.2025	5th	Magnetic properties of Transition metal complexes Types of magnetic materials,
31.8.2025 TO 02.9.2025	6th	Spin only formula, L-S coupling, correlation of μs and μeff values, orbital contribution to magnetic moments.
9.9.2025 TO 10.9.2025	7th	Electronic spectra of Transition metal complexes Selection rules for d-d transition, spectroscopic
15.9.2025 TO 17.9.2025	8th	Ground states, spectrochemical series, orgel energy level diagram for d1 and d9 states,
22.9.2025 TO 24.9.2025	9th	discussion of electronic spectrum of [Ti(H2O)6]+3 complex ion
29.9.2025 TO 01.10.2025	10th	Spectroscopy of Introduction: Electromagnetic radiation, regions of spectrum, basic features spectroscopy,
06.10.2025 TO 8.10.2025	11th	Rotational Spectrum 25 Selection rules, Energy levels of rigid rotator (semi-classical principles),
13.10.2025 TO 15.10.2025	12th	Spectral intensity distribution using population distribution (Maxwell-Boltzmann distribution), determination of bond length and isotopic effect .
27.10.2025 TO 29.10.2025	13th	Vibrational spectrum Selection rules, Energy levels of simple harmonic oscillator,
3.10.2025 TO 5.11.2025	14th	Raman Spectrum Concept of polarizibility, pure rotational and pure vibrational Raman spectra of diatomic molecules, selection rules,
10.11.2025 TO 12.11.2025	15th	Quantum theory of Raman spectra. Give more stress on numerical problems of all spectroscopy.
17.11.2025 TO 19.11.2025	16th	Irving William Series, substitution reactions of square planer complexes of Pt[II], Trans effect.
24.11.2025 TO 26.11.2025	17th	Determination of force constant and qualitative relation of force constant and bond energy,