

**MONTHLY LESSON PLAN**  
**Lesson Plan for Session 2025-26 (Odd Semester)**  
 B. Sc. 3<sup>rd</sup> Year (5<sup>th</sup> Semester)  
 Paper- XVII (CH-303) Organic Chemistry (Theory)  
 Name of Assistant Professor: Dr. Rajiv Kumar

Sr. No.	Time Periods	Topics/Chapters to be covered	Topic of Assignment/ Tests to be given to students
1	01/08/25-31/08/25	<b>Nuclear Magnetic Resonance:</b> Principle of nuclear magnetic resonance, the PMR spectrum, number of signals, peak areas, equivalent and non-equivalent protons positions of signals and chemical shift, shielding and deshielding of protons, : proton counting, splitting of signals and coupling constants, magnetic equivalence of protons. Discussion of PMR spectra of the molecules: ethyl bromide, n-propyl bromide, isopropyl bromide, 1, 1-dibromoethane, 1, 1, 2-tribromoethane, ethanol, acetaldehyde, ethyl acetate, toluene, benzaldehyde and acetophenone. Simple problems on PMR spectroscopy for structure determination of organic compounds	Assignment
2	01/09/25-30/09/25	<b>Carbohydrates:</b> Classification and nomenclature. Monosaccharides, mechanism of osazone formation, interconversion of glucose and fructose, chain lengthening and chain shortening of aldoses. Configuration of monosaccharides. Erythro and threo diastereomers. Conversion of glucose into mannose. Formation of glycosides, ethers and esters. Determination of ring size of glucose and fructose. Open chain and cyclic structure of D (+)-glucose and D(-)-fructose. Mechanism of mutarotation. Structures of ribose and deoxyribose	Test of chapter- <b>Nuclear Magnetic Resonance</b>
3	01/10/25-31/10/25	<b>Carbohydrates:</b> An introduction to disaccharides (maltose, sucrose and lactose) and polysaccharides (starch and cellulose) without involving structure determination. <b>Organometallic Compounds:</b> Organomagnesium compounds: the Grignard reagents-formation, structure and chemical reactions. Organozinc compounds: formation and chemical reactions. Organolithium compounds: formation and chemical reactions.	Test of chapter <b>Carbohydrates</b>
4	01/11/25 to till exam	Complete Syllabus Revision	Test of <b>Organometallic Compounds</b>

(Dr. Rajiv Kumar)

**Lesson Plan for Session 2025-26 (Odd Semester)**B. Sc. 2<sup>nd</sup> Year (3<sup>rd</sup> Semester)

Course code- BSC/CHEM/MD/3/DSC/201

Course Title- Chemistry-III (Theory)

Name of Assistant Professor: Dr. Rajiv Kumar

Sr. No.	Time Periods	Topics/Chapters to be covered	Topic of Assignment/ Tests to be given to students
1	01/08/25-31/08/25	<b>p-block elements</b> Electronic configuration, atomic and ionic size, metallic character, melting point, ionization energy, electron affinity, oxidation states, electronegativity, inert pair effect and diagonal relationship of 13, 14, 15, 16 & 17 group <b>Boron family (13th group):</b> Diborane: Preparation, properties, and structure (as an example of electron deficient compound and multicentre bonding), Borazine- chemical properties and structure, relative strength of Trihalides of Boron as Lewis acids, structure of aluminium (III) chloride	Group discussion
2	01/09/25-30/09/25	<b>Carbon family (14th):</b> Catenation, Carbides, silicates (structural aspects) <b>Nitrogen family (15th group):</b> Oxides: Structure of oxides of nitrogen and phosphorus, Oxyacid: Structure and relative acidic strength of oxyacids of nitrogen and phosphorus, structure of white, black and red phosphorus	Test of Topic- <b>Boron family</b>
3	01/10/25-31/10/25	<b>Oxygen family (16th group):</b> Oxy acids of sulphur – structure and acidic strength, Hydrogen Peroxide – properties and uses <b>Halogen family (17th group):</b> Interhalogen compounds (their properties and structures), oxy acids of chlorine – structure and comparison of acidic strength	Mid term exam
4	01/11/25 to till exam	Complete Syllabus Revision	Assignment on Chapter

(Dr. Rajiv Kumar)

**Lesson Plan for Session 2025-26 (Odd Semester)**

B. Sc. 2<sup>nd</sup> Year (3<sup>rd</sup> Semester)

Course code- **BSC/CHEM/MD/3/MIC/201**

Course Title- **Chemistry Minor - III (Theory)**

Name of Assistant Professor: Dr. Rajiv Kumar

Sr. No.	Time Periods	Topics/Chapters to be covered	Topic of Assignment/ Tests to be given to students
1	01/08/25-31/08/25	<b>Carbohydrates:</b> Classification of carbohydrates, reducing and non-reducing sugars, biological functions, general properties and reactions of glucose and fructose, their open chain structure, epimers, mutarotation and anomers, reactions of monosaccharides,	Group discussion
2	01/09/25-30/09/25	<b>Carbohydrates:</b> Determination of configuration of glucose (Fischer proof), Cyclic structure of glucose, Haworth projections, Cyclic structure of fructose	Assignment
3	01/10/25-31/10/25	<b>Carbohydrates:</b> Linkage between monosaccharides: structure of disaccharides (maltose, sucrose and lactose) and polysaccharides (starch and cellulose) excluding their structure elucidation.	Mid term exam
4	01/11/25 to till exam	Complete Syllabus Revision	

(Dr. Rajiv Kumar)

**Lesson Plan for Session 2025-26 (Odd Semester)**

B. Sc. 2<sup>nd</sup> Year (3<sup>rd</sup> Semester)

Course code- BSC/CHEM/MD/3/SEC/201

Course Title- **Chemistry of Cosmetics & Perfumes** (Theory)

Name of Assistant Professor: Dr. Rajiv Kumar

Sr. No.	Time Periods	Topics/Chapters to be covered	Topic of Assignment/ Tests to be given to students
1	01/08/25- 31/08/25	<b>Hair preparation:</b> Structure of hair, classification of hair, Hair dye- classification – temporary, semipermanent, permanent, formulation, hair sprays, shampoo- types of shampoo, conditioners	
2	01/09/25- 30/09/25	<b>Personal hygiene products:</b> Antiperspirants and deodorants, oral hygiene products, flavours and essential oils	Group discussion
3	01/10/25- 31/10/25	<b>Colored preparation:</b> Nail preparation Structure of nail, Nail lacquers, Nail polish remover Lipsticks	Mid term exam
4	01/11/25 to till exam	Complete Syllabus Revision	Assignment

(Dr. Rajiv Kumar)

**Lesson Plan for Session 2025-26 (Odd Semester)**B. Sc. 1<sup>st</sup> Year (2<sup>nd</sup> Semester)

Course code- BSC/CHEM/MD/1/DSC/101

Course Title- Chemistry-I (Theory)

Name of Assistant Professor: Dr. Rajiv Kumar

Sr. No.	Time Periods	Topics/Chapters to be covered	Topic of Assignment/ Tests to be given to students
1	24/07/25-31/08/25	<b>Atomic Structure:</b> Dual behaviour of matter and radiation, de Broglie's relation, Heisenberg's uncertainty principle, concept of atomic orbitals, significance of quantum numbers, radial and angular wave functions, normal and orthogonal wave functions, significance of $\psi$ and $\psi^2$ , shapes of s, p, d and f orbitals, rules for filling electrons in various orbitals, effective nuclear charge, Slater's rules <b>Periodic Table and Atomic Properties:</b> Classification of periodic table, definition of atomic and ionic radii, ionization energy, electron affinity and electronegativity,	Group Discussion
2	01/09/25-30/09/25	<b>Periodic Table and Atomic Properties:</b> trends in periodic table (in s and p block elements), Pauling, Mulliken, Allred Rachow and Mulliken Jaffe's electronegativity scale. <b>Gaseous State:</b> Kinetic theory of gases, Maxwell's distribution of velocities and energies (derivation excluded), Calculation of root mean square velocity, average velocity and most probable velocity. Collision diameter, collision frequency and mean free path (derivation excluded)	Test of Chapter: Atomic structure
3	01/10/25-31/10/25	<b>Gaseous State:</b> Deviation of real gases from ideal gas behaviour, 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 <b>Solid State:</b> Classification of solids, Elements of symmetry and symmetry elements of crystals, definition of unit cell and space lattice, bravais lattices, crystal system, Laws of crystallography – Law of constancy of interfacial angles, law of rationality of indices and law of symmetry, Miller Indices X-ray diffraction by crystals, derivation of Bragg's law and Bragg's equation, Determination of crystal structure of NaCl and KCl	Mid term exam
4	01/11/25 to till exam	Complete Syllabus Revision	Assignment

(Dr. Rajiv Kumar)

**Lesson Plan for Session 2025-26 (Odd Semester)**B. Sc. 1<sup>st</sup> Year (2<sup>nd</sup> Semester)

Course code- BSC/BCOM/BA/CHEM/MD/1/MDC/101

Course Title- Introductory Chemistry-I (Theory)

Name of Assistant Professor: Dr. Rajiv Kumar

Sr. No.	Time Periods	Topics/Chapters to be covered	Topic of Assignment/ Tests to be given to students
1	24/07/25-31/08/25	<b>Atomic Structure Concept of Bonding (1-20)</b> Introduction, Elementary introduction of atomic structure, Representation of elements/ atoms, Bohr Model, Lewis's dot structure, electronic configurations, Ionization Energy, Electron Affinity Electro Negativity, Types of Bonding	Group Discussion
2	01/09/25-30/09/25	<b>Carbon and its Compounds</b> Introduction, Tetravalency of Carbon, allotropes of carbon and their properties, hydrocarbons (1-5), Nomenclature (linear compounds), Applications of hydrocarbons. <b>Polymers</b> Introduction, elementary idea of polymer, Types of polymers: Natural, synthetic, semi-synthetic Homo polymers and copolymers, uses of polymer (Natural rubber, Vulcanized rubber, Polyethene, PVC, Styrene, Teflon, PAN, Nylon-66)	Test of Chapter: Atomic structure
3	01/10/25-31/10/25	<b>Food Preservatives</b> Elementary idea of natural and synthetic food preservatives, rancidity, uses and properties, different food preservation processes (pickle, Jam), artificial sweeteners, uses and properties	Mid term exam
4	01/11/25 to till exam	Complete Syllabus Revision	Assignment

(Dr. Rajiv Kumar)

**MONTHLY LESSON PLAN**  
**B.SC. 5TH SEMESTER**  
**SUBJECT: PHYSICAL CHEMISTRY, SESSION 2025-26**

<b>CMG GCW BHOIA KHERA, FATEHABAD</b>	
<b>NAME OF THE ASSISTANT PROFESSOR</b>	<b>MR. SATISH CHANDER</b>
<b>NOMENCLATURE:</b>	<b>PHYSICAL CHEMISTRY (CH-302)</b>
<b>MONTH</b>	<b>TOPICS</b>
<b>August 2025</b>	<p><b>Quantum Mechanics-I</b>            Black-body radiation, Plank's radiation law, photoelectric effect, postulates of quantum mechanics, quantum mechanical operators,</p> <p><b>Quantum Mechanics-I</b>            commutation relations, Hamiltonian operator, Hermitian operator, average value of square of Hermitian as a positive quantity, Role of operators in quantum mechanics, To show quantum mechanically that position and momentum cannot be predicated simultaneously, Determination of wave function &amp; energy of a particle in one dimensional box</p> <p><b>Assignment</b></p>
<b>September 2025</b>	<p><b>Physical Properties and Molecular Structure</b>            Optical activity, polarization – (Clausius – Mossotti equation derivation excluded). Orientation of dipoles in an electric field, dipole moment, induced dipole moment, measurement of dipole moment -temperature method and refractivity method, dipole moment and structure of molecules, Magnetic permeability, magnetic susceptibility and its determination. Application of magnetic susceptibility, magnetic properties – paramagnetism, diamagnetism and ferromagnetism.</p> <p><b>Spectroscopy</b>            Introduction: Electromagnetic radiation, regions of spectrum, basic features of spectroscopy, statement of Born-oppenheimer approximation, Degrees of freedom.</p> <p><b>Rotational Spectrum</b>            Selection rules, Energy levels of rigid rotator (semi-classical principles), rotational spectra of diatomic molecules, spectral intensity distribution using population distribution (Maxwell-Boltzmann distribution), determination of bond length and isotopic effect.</p>
<b>October 2025</b>	<p><b>Vibrational spectrum</b> Selection rules, Energy levels of simple harmonic oscillator, pure vibrational spectrum of diatomic molecules, determination of force constant and qualitative relation of force constant and bond energy, idea of vibrational frequencies of different functional groups.</p> <p><b>Raman Spectrum:-</b>Concept of polarizability, pure rotational and pure vibrational Raman spectra of diatomic molecules, selection rules, Quantum theory of Raman spectra.</p> <p style="text-align: center;"><b>Unit Test</b></p>
<b>November 2025 to till Exam</b>	Complete Syllabus Revision Work and doubt

**(MR. SATISH CHANDER)**

**MONTHLY LESSON PLAN**  
**B.SC. 3<sup>rd</sup> SEMESTER**  
**SUBJECT: CHEMISTRY**  
**SESSION:-2025-26**

<b>CMG GCW BHOIA KHERA, FATEHABAD</b>	
<b>NAME OF THE ASSISTANT PROFESSOR</b>	<b>MR. SATISH CHANDER</b>
<b>NOMENCLATURE:</b>	<b>BSC/CHEM/MD/1/DSC/301</b>
<b>MONTH</b>	<b>TOPICS</b>
<b>August 2025</b>	<p><b>Alkene:-</b> Structure and bonding in alkenes, Methods of preparation - Dehydration of alcohols (with mechanism),Regioselectivity in dehydration: Saytzeff's rule and Hoffmann rule,dehydrohalogenation of alkyl halides. Physical properties and relative stabilities of alkenes. Chemical Reactions: hydrogenation (without mechanism),electrophilic addition reactions with examples (with mechanism),</p> <p><b>Assignment</b></p>
<b>September 2025</b>	<p>Markownikoff's rule, oxymercuration demercuration, hydroboration oxidation, ozonolysis, hydration, hydroxylation and oxidation with <math>\text{KMnO}_4</math>,</p> <p><b>Arenes &amp; Aromaticity</b></p> <p><b>Aromaticity:</b> Huckel's rule, concept of Aromatic, non-aromatic and antiaromatic compounds. Applications of Huckel's rule in Aromatic ions and compounds.</p> <p>Structure of Benzene, Aromatic electrophilic substitution- general pattern of the mechanism. Mechanism of nitration, sulphonation, Friedel-Crafts reaction, Activating and deactivating substituent and orientation.</p>
<b>October 2025</b>	<p>Methods of preparation- from alkenes and alcohols, physical properties, nucleophilic substitution reactions of alkyl halides, <math>\text{S}_\text{N}</math>, and <math>\text{S}_\text{N}2</math> reactions (mechanism) with energy profile diagrams. Concept of racemisation,retention and inversion.</p> <p><b>Unit Test</b></p>
<b>November 2025 To till Exam</b>	Complete syllabus revision work and doubt

**(MR. SATISH CHANDER)**

**B.SC. 3<sup>rd</sup> SEMESTER**  
**SUBJECT: CHEMISTRY MINOR**  
**SESSION:-2025-26**

<b>CMG GCW BHOIA KHERA, FATEHABAD</b>	
<b>NAME OF THE ASSISTANT PROFESSOR</b>	<b>MR. SATISH CHANDER</b>
<b>NOMENCLATURE:</b>	<b>BSC/CHEM/MD/3/MIC/301</b>
<b>MONTH</b>	<b>TOPICS</b>
<b>August 2025</b>	<b>Solutions:-</b> Thermodynamics of ideal solutions: Ideal solutions and Raoult's law, deviations from Raoult's law- non-ideal solutions. Vapour pressure, composition and temperature-composition curves of ideal and non-ideal solutions.
<b>September 2025</b>	Distillation of solutions. Lever rule, Azeotropes, Partial miscibility of liquids: Critical solution temperature; effect of impurity on partial miscibility of liquids. Immiscibility of liquids: principle of steam distillation. <b>Assignment</b>
<b>October 2025</b>	Nernst distribution law and its applications. solvent extraction <b>Unit Test</b>
<b>November 2025 To till Exam</b>	Complete syllabus revision work and doubt

**(MR. SATISH CHANDER)**

**B.SC. 1<sup>ST</sup> SEMESTER**  
**SUBJECT: CHEMISTRY-I**  
**SESSION 2025-26**

<b>CMG GCW BHOIA KHERA, FATEHABAD</b>	
<b>NAME OF THE ASSISTANT PROFESSOR</b>	<b>MR. SATISH CHANDER</b>
<b>NOMENCLATURE:</b>	<b>BSC/CHEM/MD/1/DSC/101</b>
<b>MONTH</b>	<b>TOPICS</b>
<b>August 2025</b>	<b>General organic Chemistry</b> Localized and delocalized chemical bond, Van der Waal's Interactions, <b>Structure and Bonding</b> Resonance and its conditions, resonance effect and its applications, hyperconjugation, inductive effect, Electromeric effect & their comparison.
<b>September 2025</b>	<b>Stereochemistry of Organic Compounds</b> Concept of isomerism. Types of isomerism. Optical isomerism, elements of symmetry, molecular chirality, enantiomers, stereogenic centre, optical activity, properties of enantiomers, chiral and achiral molecules with two stereogeniccentres, diastereomers, threo and erythro diastereomers, meso compounds. Relative and absolute configuration, sequence rules, R & S systems of nomenclature Geometric isomerism, determination of configuration of geometric isomers. E & Z system of nomenclature, <b>Assignment</b>
<b>October 2025</b>	<b>Stereochemistry of Organic Compounds</b> Conformational isomerism- conformational analysis of ethane and n-butane, conformations of cyclohexane. <b>Unit Test</b>
<b>November 2025</b>	Complete syllabus revision work and doubt

(MR. SATISH CHANDER)

**B.SC. 1<sup>ST</sup> SEMESTER**  
**SUBJECT: CHEMISTRY MINOR-I**  
**SESSION 2025-26**

<b>CMG GCW BHOIA KHERA, FATEHABAD</b>	
<b>NAME OF THE ASSISTANT PROFESSOR</b>	<b>MR. SATISH CHANDER</b>
<b>NOMENCLATURE:</b>	<b>BSC/CHEM/MD/1/MIC/101</b>
<b>MONTH</b>	<b>TOPICS</b>
<b>August 2025</b>	<b>Alkanes</b> IUPAC nomenclature of branched and unbranched alkanes, classification of carbon atoms in alkanes. Isomerism in alkanes, sources, methods of formation: Wur tz reaction, Kolbe reaction, Corey-House reaction and decarboxylation of carboxylic acids,.
<b>September 2025</b>	Physical properties. Mechanism of free radical halogenation of alkanes: reactivity and selectivity Metallic bond- Qualitative idea of valence bond and band theories of metallic bond(conductors,semiconductors,insulators) <b>Assignment</b>
<b>October 2025</b>	Semiconductors-Introduction, types and applications <b>Unit Test</b>
<b>November 2025</b>	Complete syllabus. Revision work and doubt.

**(MR. SATISH CHANDER)**

**B.SC. 1<sup>st</sup> SEMESTER**  
**SUBJECT: FUEL CHEMISTRY**  
**SESSION 2025-26**

<b>CMG GCW BHOIA KHERA, FATEHABAD</b>	
<b>NAME OF THE ASSISTANT PROFESSOR</b>	<b>MR. SATISH CHANDER</b>
<b>CLASS AND SECTION:</b>	<b>BSC 1<sup>st</sup> SEMESTER</b>
<b>SUBJECT:</b>	<b>FUEL CHEMISTRY</b>
<b>NOMENCLATURE:</b>	<b>CDLU/CHEM/SEC/1/102</b>
<b>MONTH</b>	<b>TOPICS</b>
<b>August 2025</b>	Review of energy sources(renewable and non-renewable). Classification of fuel and their calorific value.determination of calorific value by Bomb Calorimeter and Junker's calorimeter. Analysis of coal, proximate and ultimate analysis.
<b>September 2025</b>	Uses of coal (fuel and nonfuel) in various industries, its Composition, carbonization of coal. Coal gas, producer gas and water gas composition and uses. Fractionation of coal tar, uses of coal tar-based chemicals, requisites of a good metallurgical coke, Coal gasification (Hydro gasification and Catalytic gasification), Coal liquefaction and Solvent Refining. Petroleum and Petrochemical Industry: Composition of crude petroleum, Refining and different types of Petroleum products and their applications.
<b>October 2025</b>	Fractional Distillation (Principle and process), Cracking (Thermal and catalytic cracking), Reforming Petroleum and non-petroleum fuels (LPG, CNG, LNG, bio-gas, fuels derived from biomass), fuel from waste, synthetic fuels (gaseous and liquids), clean fuels. Petrochemicals: Vinyl acetate, Propylene oxide, Isoprene, Butadiene, Toluene and its derivatives Xylene
<b>Nov.2025</b>	Complete syllabus Revision work and doubt.

**(MR. SATISH CHANDER)**

**MONTHLY LESSON PLAN**  
**B.A. 1<sup>ST</sup> SEMESTER**  
**SUBJECT: UNIVERSAL HUMAN VALUES, SESSION 2025-26**

<b>CMG GCW BHOIA KHERA, FATEHABAD</b>	
<b>NAME OF THE ASSISTANT PROFESSOR</b>	<b>MR. SATISH CHANDER</b>
<b>CLASS AND SECTION:</b>	<b>B.A. 1<sup>ST</sup> SEMESTER</b>
<b>SUBJECT:</b>	<b>UNIVERSAL HUMAN VALUES</b>
<b>MONTH</b>	<b>TOPICS</b>
<b>August 2025</b>	<p><b>Unit-1</b>  <b>Love and Compassion (Prem and Karuna):</b> Introduction, love and its forms: love for self, parents, family, friend, spouse, community, nation, humanity and other beings- living and non-living. Love and compassion and inter-relatedness; The faculty member needs to explain the relationship between love and compassion and other related feelings and emotions like empathy, sympathy, and non-violence. Individuals who are remembered in history or collective memory for practising compassion and love; (such as the Buddha, and Jesus Christ) Narratives and anecdotes from history, literature, including local folklore.</p> <p><b>Truth (Satya):</b> What is truth? A Universal truth, truth as value (artha), truth as fact (satya) (veracity, sincerity, honesty among others), Individuals who are remembered in history for practising this value; (Raja Harishchandra, Dharmaraja Yudhishtira, Gautama Buddha, Socrates, and Mahatma Gandhi, among others), Narratives and anecdotes about truth from history, collective memory, and literature including local folklore.</p> <p><b>Non-Violence (Ahinsa):</b> What is non-violence and its need? Love, compassion, empathy, and sympathy are prerequisites for non-violence. Ahimsa is non-violence and non-killing. Individuals and organizations that are known for their commitment to non-violence. Narratives and anecdotes about non-violence from history and literature including local folklore.</p>
<b>September 2025</b>	<p><b>Righteousness (Dharma):</b> What is righteousness? Righteousness and dharma, righteousness and propriety. Individuals who are remembered in history for practising righteousness. Narratives and anecdotes from history and literature, including local folklore.</p> <p><b>Unit-2</b>  <b>Peace (Shanti):</b> What is peace and its need? Peace, harmony and balance. Individuals and organizations that are known for their commitment to peace (Mahatma Gandhi, United Nations). Narratives and anecdotes about peace from history and literature including local folklore.</p> <p><b>Service (Seva):</b> What is service? Forms of service: for self, parents, spouse, family, friends, community, persons in distress, nation, humanity and other living and non-living things Individuals who are remembered in history for practising this value.</p>

	Narratives and anecdotes dealing with instances of service from history and literature including local folklore.
<b>October 2025</b>	<p><b>Renunciation Sacrifice (Tyaga):</b> What is renunciation? Renunciation and sacrifice. Greed is the main obstruction in the path of renunciation. Self-restraint and other ways of overcoming greed. Renunciation with action as true renunciation. Individuals who are remembered history for practising this value* footnote (The faculty member may suggest names of local characters or leaders that could be relevant.) like: Sri Rama, Bhishma, Gautama Buddha, Mahavira, Jesus Christ, Guru Govind Singh, Bhagat Singh, and Mahatma Gandhi.) Narratives and anecdotes from history and literature, including local folklore about individuals who are remembered for their sacrifice and renunciation.</p> <p><b>Constitutional Values, Justice and Human Rights:</b> contains fundamental values enshrined in our Constitution, which were practised even during the time of the Buddha in democratic city states in ancient India. comprises associated fundamental rights which are guaranteed not only in our Constitution but also in the Universal Declaration of Human Rights (1948), Enumerates the Fundamental Duties of Indian Citizens, Patriotism, pride and gratitude for the nation.</p>
<b>Nov.2025</b>	Complete syllabus Revision work and doubt.

(MR. SATISH CHANDER)

## Lesson Plan (Odd Semester) Session 2025-26

Name of the Assistant Professor:- Parveen Kumar

B. Sc. Ist Year Minor (Ist Semester)

Paper II (Theory) Physical Chemistry CH-102

Subject:-Chemistry

Sr. No.	Period	Topics to be covered
1	August 2025	Kinetics Rate of reaction, rate equation and its types, factors influencing the rate of a reaction – concentration, temperature, pressure, solvent, light, catalyst. Order of a reaction, integrated rate expression for zero order, first order, second and third order reactions. Half life period of a reaction. Effect of temperature on the rate of reaction – Arrhenius equation.
2	September 2025	<b>Gaseous states:</b> kinetic molecular theory of gases, Maxwell's distribution of velocities and energies (derivation excluded), calculation of root mean square velocity, average velocity and most probable velocity, collision diameter, collision number, collision frequency and mean free path (derivation excluded), derivation of real gases from ideal behavior, derivation of Vander Waal's equation of state, its application in the calculation of Boyle's temperature (compression factor)
3	October 2025	Critical temperature, Critical pressure, Critical volume and their determination, PV isotherms of real gases, continuity of states, the isotherm of Vander Waal's equation, relationship between critical constants and Vander Waal's constants, critical compressibility factor, The Law of corresponding states
4	November 2025 to till exam	<b>Liquid states:</b> structure of liquids, properties of liquids- surface tension, refractive index, viscosity, vapour pressure and optical rotation  Assignment
1	August 2025	<b>Revision</b>

## Lesson Plan (Odd Semester) Session 2025-26

Name of the Assistant Professor:- Mr. Parveen Kumar

B. Sc. 2nd Year (3<sup>rd</sup> Semester)

Paper VIII (Theory) Inorganic Chemistry CH-201

Subject:-Chemistry

Sr. No.	Period	Topics to be covered
1	August 2025	Electrochemistry Electrolytic conduction, factors affecting electrolytic conduction, specific conductance, molar conductance, equivalent conductance and relation among them, their variation with concentration. Arrhenius theory of ionization, Ostwald's Dilution Law. Debye Huckel – Onsager's equation for strong electrolytes (elementary treatment only), Application of Kohlrausch's Law in calculation of conductance of weak electrolytes at infinite dilution. Applications of conductivity measurements: determination of degree of dissociation, determination of $K_a$ of acids determination of solubility product of sparingly soluble salts,
2	September 2025	Concepts of pH and pKa, Buffer solution, Buffer action, Henderson – Hazel equation, Buffer mechanism of buffer action.
3	October 2025	
4	November 2025 to till exam	<b>Chemistry of Elements of IInd &amp; IIIrd transition series:</b> General characteristics and properties of the IInd and IIIrd transition elements Comparison of properties of 3d elements with 4d & 5d elements with reference only to ionic radii, oxidation state, magnetic and Spectral properties and stereochemistry  Test
5	31/10/23 to till exam	<b>Revision</b>

(Mr. Parveen Kumar)

Name of the Assistant Professor:- Mr. Parveen Kumar  
 B. Sc. III Year (Vth Semester)  
 Paper XV (Theory) Inorganic Chemistry CH-301  
 Subject:-Chemistry

Sr. No.	Period	Topics to be covered
1	August 2025	<p><b>Metal-ligand Bonding in Transition Metal Complexes</b> Limitations of valence bond theory, an elementary idea of crystal-field theory, crystal field splitting in octahedral, tetrahedral and square planar complexes, factors affecting the crystal-field parameters.</p>
2	September 2025	<p><b>Thermodynamic and Kinetic Aspects of Metal Complexes:</b> A brief outline of thermodynamic stability of metal complexes and factors affecting the stability, substitution reactions of square planar complexes of Pt(II).</p> <p><b>Magnetic Properties of Transition Metal Complexes:</b> Types of magnetic behavior, methods of determining magnetic susceptibility, spin-only formula. L-S coupling, correlation of <math>\mu_s</math> and <math>\mu_{\text{eff}}</math> values, orbital contribution to magnetic moments, application of magnetic moment data for 3d metal complexes</p> <p>Assignment</p>
3	October 2025	<p><b>Electron Spectra of Transition Metal Complexes:</b> Types of electronic transitions, selection rules for d-d transitions, spectroscopic ground states, spectrochemical series. Orgel-energy level diagram for d1 and d 9 states, discussion of the electronic spectrum of <math>[\text{Ti}(\text{H}_2\text{O})_6]^{3+}</math> complex ion.</p> <p>Test</p>
4	November 2025 to till exam	Complete Syllabus Revision Work and doubt

(Mr. Parveen Kumar)