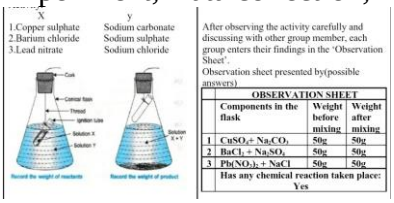
KVS ZIET MUMBAI

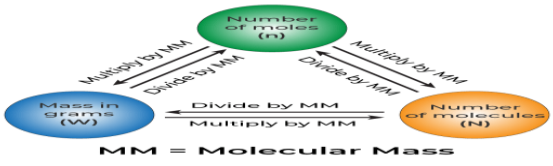
LESSON PLAN CLAS – XI

SUBJECT - CHEMISTRY

CH-1: SOME BASIC CONCEPTS OF CHEMISTRY

LESSON PLAN-I	
Class	XI
Subject	CHEMISTRY
Chapter / Topic	**Some basic concepts in chemistry** **Laws of Chemical combination (Part - I)**
Gist of the Lesson/Concept	● Laws of Chemical combinations ● Law of conservation of mass ● Law of definite proportions ● Law of multiple proportions
Focussed skills/competencies	● Observation ● Critical Thinking ● Scientific knowledge to reason ● Experimentation ● Numerical abilities
Targeted learning outcomes (TLO)	The learner will able to ● Define various laws of Chemical combinations. ● Understand law of conservation of mass and understand it's importance in balanced chemical equations. ● Contribution of scientists Antoine Lavosier, Joseph Proust and Dalton in chemistry. ● Solve numericals based on the laws of Chemical combinations
Pedagogical strategies planned for achieving the TLO	● Analyses and interprets data of percentage of elements present in natural sample and synthetic sample . ● Experiment to explain law of conservation of mass. ● Collect and analyse data for verifying law of conservation of mass. ● Group task & peer learning.
Interdisciplinary linkages and infusion of life skills, values etc	● Applications of law of conservation of mass in daily life. When a log burns in a fireplace, the mass of the log is converted into ash, smoke, and gases. However, the total mass of the system (the log, the air in the room, and the products of combustion) remains the same
Resources including ICT	Experiment, Data collection, PowerPoint  X 1.Copper sulphate 2.Barium chloride 3.Lead nitrate y Sodium carbonate Sodium sulphate Sodium chloride After observing the activity carefully and discussing with other group member, each group enters their findings in the 'Observation Sheet'. Observation sheet presented by(possible answers) OBSERVATION SHEET Components in the flask | Weight before mixing | Weight after mixing 1 $CuSO_4$+ Na_2CO_3 50g 50g 2 $BaCl_2$ + Na_2SO_4 50g 50g 3 $Pb(NO_3)_2$ + NaCl 50g 50g Has any chemical reaction taken place: Yes
Inclusive practices	● HOTS questions ● MLL questions ● Allow students to record classroom presentation. ● Encourage group task & peer assistance for experiment work. ● Highlight and underline the key concept.
Assessment items for measuring the attainment of LOs	● Multiple choice questions with one correct answer. ● Multiple choice questions with two correct answers. ● Statement based questions

	• Assertion & reasoning based question • Case based questions • Oral testing.

LESSON PLAN-II	
Class	XI
Subject	CHEMISTRY
Topic	Some basic Concepts of Chemistry. (Part – II)
Gist of the Lesson/Concept	Dalton's Atomic Theory. Atomic and Molecular mass. Mole Concept and molar mass. Percentage composition. Stoichiometry and Stoichiometry calculations.
Focussed skills/competencies	Objectivity Critical Thinking with Data Scientific knowledge to reason Numerical abilities
Targeted learning outcomes (TLO)	Understands Dalton concept. Describe the terms mole and molar mass. Calculate no. of moles and molar mass of various compounds. Use of formula and putting correct values. Proper calculation with correct units. Significance of gram atomic mass, gram molecular mass .
Pedagogical strategies planned for achieving the TLO	The learner will be able to Define Avogadro's law, Dalton theory. Correlate mole with gram atomic mass & gram molecular mass. Solve numericals based on it. Learn formula or calculation through .
Interdisciplinary linkages and infusion of life skills, values etc	Analyses and interprets data of mole concept. To get the concept of large number of atoms and molecule with real life.1 mole =58.5gm of common salt (NaCl). Linked with mathematics. Exhibits values of honesty ,objectivity & rational thinking.
Resources including ICT	Charts, power point, presentation, mind maps 
Inclusive practices	HOTS questions MLL questions Encourage group task & peer assistance. Highlight and underline the key concept.
Assessment items for measuring the attainment of LOs	Multiple choice questions with one correct answer. Statement based questions Assertion & reasoning based questions Google forms Case based questions Oral testing. Open book test.

CH-2: STRUCTURE OF ATOM

LESSON PLAN-I	
Class	XI
Subject	CHEMISTRY
Topic	**STRUCTURE OF ATOM (PART I)**
Gist of the Chapter	• Historical relevance & Objectivity of study of structure of atom • Sub- Atomic particles, their discovery & Characteristics • Atomic Models viz Thomson's, Rutherford's, Bhor's
Focussed skills/competencies	• Objectivity • Experimentation • Observation • Reasoning • Critical Thinking • Measurement
Targeted learning outcomes (TLO)	The learner realise that • Atom despite of being the tiniest still have far tiniest particles. • About the Experimentation that lead to discovery of sub – Atomic particles • About the conclusions drawn from experimental observations. • About similarities & differences in between different Atomic models
Pedagogical strategies planned for achieving the TLO	• Discussing aspects of Dalton's Atomic theory & indivisibility of atom • Discussing experimentation that lead to discovery of sub-Atomic particles. • Discussion on observations of Experiments • Discussion on drawing of conclusion from observations of experiment • Group task & peer learning.
Interdisciplinary linkages and infusion of life skills, values etc	• Learner learn about the Indian contribution to study of atom and realise that things happens at Atomic level
Resources including ICT	Charts, Graphs, PowerPoint ,animations
Inclusive practices	• HOTS questions • MLL questions • Use embossed diagrams for explaining pictures & graphs. • Allow students to record classroom presentation or text in audio format. • Encourage group task & peer assistance for experiment work. • Highlight and underline the key concept.

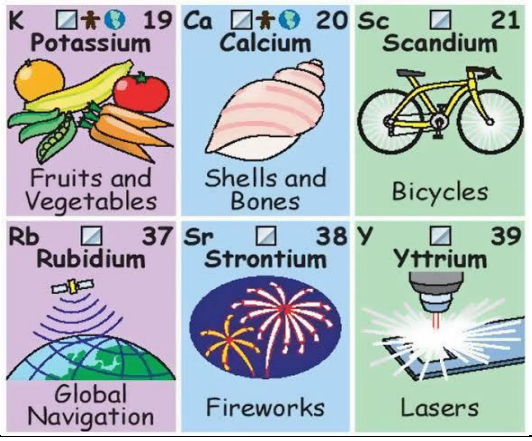
Assessment items for measuring the attainment of LOs	• Multiple choice questions with one correct answer. • Multiple choice questions with two correct answers. • Statement based questions • Assertion & reasoning based questions • Google forms • Case based questions • Graph based questions • Oral testing. • Open book test.

LESSON PLAN-II	
Class	XI
Subject	CHEMISTRY
Topic	**Structure of Atom (Part - II)**
Gist of the Chapter	Atomic & Mass Number, Isotopes & Isobars Nucleons Electromagnetic Radiation & Electromagnetic Spectrum Duality of EM Radiation & Photoelectric Effect Emission, Absorption, Line Spectrum & its Interpretation Bohr's Model Limitation Quantum Mechanical Model of Atom Heisenberg Uncertainty Principle Quantum Numbers Shapes of Atomic Orbitals Fillings of electron in Atomic Orbitals Aufbau, Hunds & Paul's Principles Electronic Configuration of Atoms
Focussed skills/competencies	. Experimentation . Observation . Interpretation · Reasoning · Critical Thinking · Measurement
Targeted learning outcomes (TLO)	The learner realise that • Atom despite of being the tiniest still have far tiniest particles. • About the Experimentation that lead to discovery of sub – Atomic particles • About the conclusions drawn from experimental observations. • About similarities & differences in between different Atomic models • About the logical basis of structure of atom

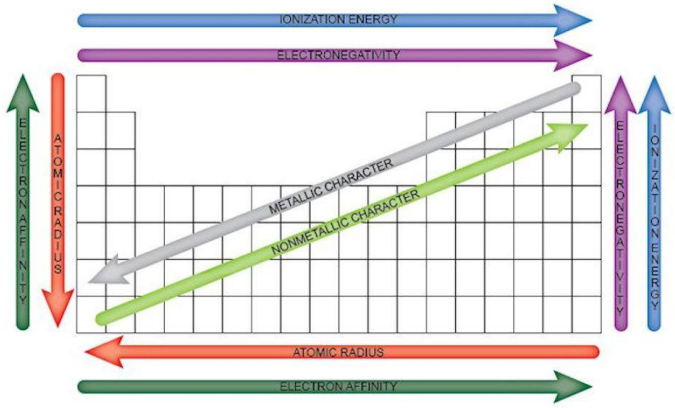
	• About the writing of electronic configuration of atom of various elements • About the EM Radiation & its Spectrum • About duality of matter & EM Radiation • Learner learn about the all underlying concepts of Gist of the chapter
Pedagogical strategies planned for achieving the TLO	Holding Discussion Explanation Drawing various diagrams graphs charts Assigning problems Assessment
Interdisciplinary linkages and infusion of life skills, values etc	Learner learn about the logical Interpretation of structure of atom & appreciate & applied it in life.
Resources including ICT	Charts, Graphs, PowerPoint, animations
Inclusive practices	. HOTS questions · MLL questions · Use embossed diagrams for explaining pictures & graphs. · Allow students to record classroom presentation or text in audio format. · Encourage group task & peer assistance for experiment work. · Highlight and underline the key concept.
Assessment items for measuring the attainment of LOs	Assessment items for measuring the attainment of LOs Multiple choice questions with one correct answer. Multiple choice questions with two correct answers. Statement based questions Assertion & reasoning based questions Google forms Case based questions Graph based questions Oral testing. Open book test.

CH-3: CLASSIFICATION OF ELEMENTS

LESSON PLAN-I	
Class	XI
Subject	CHEMISTRY
Topic	Periodic Classification (Part - I)
Gist of the Lesson/**Concept**	• Need of classification of elements • Genesis of periodic classification. • Law of Triads by **Johann Dobereiner.** • **Law of Octaves** by Newland. • **Mendeleev's periodic table.**
Focussed skills/competencies	• Objectivity • Critical Thinking with Data & logical interpretation. • Scientific knowledge to reason. • Comprehensive understanding
Targeted learning outcomes (TLO)	The learner will able to • Identify similarities and differences in terms of chemical behaviour and properties. • Relate periodic table trends to types of chemical bonding (ionic, covalent, metallic) and molecular structure. • Recognize practical applications of elements based on their properties. • Understand the historical development of the periodic table, contributions of key scientists, and the rationale behind its current structure.
Pedagogical strategies planned for achieving the TLO	• Making conceptual framework with basic concepts of atomic structure. • Present learning through graphs. • Conduct activities such as element sorting, where students group elements based on properties like metals/non-metals, alkali metals, halogens. • Group task & peer learning.
Interdisciplinary linkages and infusion of life skills, values etc	• Involves connecting chemistry concepts with other subjects like physics (atomic structure), biology (elements in living organisms), and environmental science (chemical elements in ecosystems). • Infusing life skills like environmental stewardship (chemical elements in ecosystem.)
Resources including ICT	Charts, Graphs, PowerPoint, animations • Owing to the distinctive properties of each element, their usage varies widely, for instance,

	
Inclusive practices	• HOTS questions • MLL questions • Use embossed diagrams for explaining pictures & graphs. • Allow students to record classroom presentation or text in audio format. • Encourage group task & peer assistance for experiment work. • Highlight and underline the key concept.
Assessment items for measuring the attainment of LOs	• Multiple choice questions with one correct answer. • Multiple choice questions with two correct answers. • Statement based questions • Assertion & reasoning based questions • Google forms • Case based questions • Graph based questions • Oral testing. • Open book test.

LESSON PLAN-II	
Class	XII
Subject	CHEMISTRY
Topic	**PERIODIC TRENDS IN PROPERTIES OF ELEMENTS (Part - II)**
Gist of the Lesson/Concept	• Trends in physical properties • Atomic Radius • Ionic Radius • Ionization Enthalpy • Electron gain enthalpy • Electronegativity

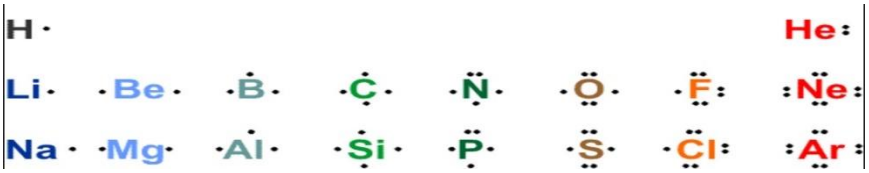
Focussed skills/competencies	• Objectivity • Critical Thinking with Data & Graphical Interpretations • Scientific knowledge to reason • Observation • Drawing conclusion
Targeted learning outcomes (TLO)	The learner will able to • Define the terms like Atomic Radius, ionic radius, electon gain enthalpy, ionization energy and electronegativity • Identify isoelectronic species • Explain the reason for changing trends in ionization enthalpy • Apply scientific reasons for less negative value of electron gain enthalpy for oxygen or fluorine • Differentiate electron gain enthalpy and electronegativity
Pedagogical strategies planned for achieving the TLO	• Analyses and interprets the values of atomic and ionic adii along the group and across the period and interpret it. • Present learning through graphs. • Gather values of electronegativity and electron gain enthalpy for comparison of elements across the period and along the group. • Observation of elements in periodic table • Group task & peer learning.
Interdisciplinary linkages and infusion of life skills, values etc	• Applications of various elements in our daily life • Exhibits values of honesty, objectivity & rational thinking
Resources including ICT	Charts, Graphs, PowerPoint, animations
Inclusive practices	• HOTS questions • MLL questions • Use embossed diagrams for explaining pictures & graphs.  • Allow students to record classroom presentation or text in audio format. • Encourage group task & peer assistance for experiment work. • Highlight and underline the key concept.

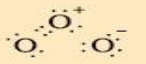
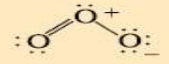
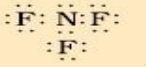
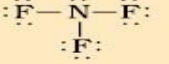
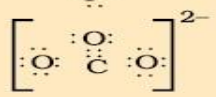
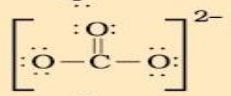
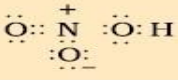
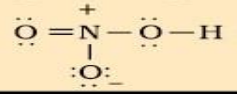
Assessment items for measuring the attainment of LOs	• Multiple choice questions with one correct answer. • Multiple choice questions with two correct answers. • Statement based questions • Assertion & reasoning based questions • Google forms • Case based questions • Graph based questions • Oral testing. • Open book test.

CH-4: CHEMICAL BONDING AND MOLECULAR STRUCTURE

LESSON PLAN-I	
Class	XII
Subject	CHEMISTRY
Topic	**Chemical bonding (Part I)**
Gist of the Lesson/Concept	• Kossel-Lewis approach to chemical bonding • Octet rule and its limitations • Lewis structure of simple molecules • Formation of different types of bonds • Bond parameters and resonance structures • Polarity of bonds • Concept of geometry of molecules • Application of valence shell electron pair repulsion theory • Structure of molecules and arrangement of atoms in a molecular compound.
Focussed skills/competencies	• Objectivity • Scientific knowledge to reason • Drawing of shape of simple covalent molecules • Critical thinking
Targeted learning outcomes (TLO)	The learner will able to • To understand Kossel -Lewis approach to chemical bonding • To draw Lewis structures of simple molecule • To know the formation of different type of bonds • To predict directional property of covalent bond • To find out formal charge • To know about bond parameters • Two understand about polarity of bonds • To describe valence shell electron pair repulsion theory • To predict shape of molecules • To compare shapes of different molecules

Pedagogical strategies planned for achieving the TLO	• To describe Kossel - Lewis approach to chemical bonding • To describe Lewis representation of simple molecule • To described bond parameters • To describe polarity of bonds • To describe the implication of electron pair repulsions on molecular shape. • To show some shapes through PPT • To show videos • To describe order of repulsions lp-lp> lp-bp>bp-bp
Interdisciplinary linkages and infusion of life skills, values etc	• To predict the type of bonds in simple covalent molecule • To predic bond angle in simple covalent molecules • To predict structure of molecules • To make the correlation between geometry, non-bonding pairs and molecular shape.
Resources including ICT	Charts, Power point presentations, Videos and Animations

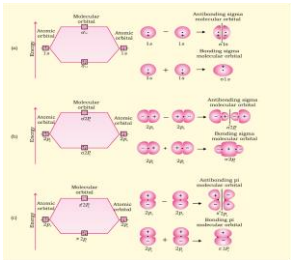
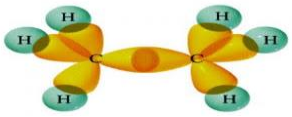


Molecule/Ion	Lewis Representation	
H_2	H : H*	H – H
O_2	:Ö::Ö:	:Ö=Ö:
O_3		
NF_3		
CO_3^{2-}		
HNO_3		

Molecule type	No. of bonding pairs	No. of lone pairs	Arrangement of electron pairs	Shape	Examples
AB_2E	2	1	 Trigonal planer	Bent	SO^2O_3
AB_3E	3	1	 Tetrahedral	Trigonal pyramidal	NH_3
AB_2E_2	2	2	 Tetrahedral	Bent	H_2O
AB_4E	4	1	 Trigonal bi-pyramidal	See saw	SF_4
AB_3E_2	3	2	 Trigonal bi-pyramidal	T-shape	ClF_3
AB_5E	5	1	 Octahedral	Square pyramid	BrF_5
AB_4E_2	4	2	 Octahedral	Square planer	XeF_4

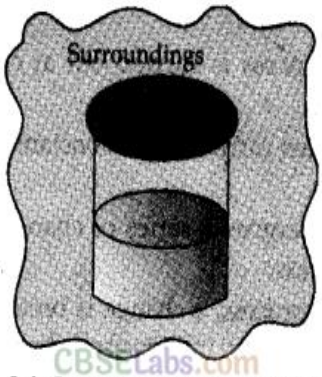
Inclusive practices	• HOTS questions • MLL questions • Use Chart on Shapes of molecules for explaining shapes of molecules. • Allow students to record classroom presentation on text in audio format • Encourage group task and peer assistant for experiment for highlight and underline the key concept.
Assessment items for measuring the attainment of LOs	• Multiple choice questions with one correct answer. • Multiple choice questions with two correct answers • Assertion-Reason statement-based questions • Google forms • Case based questions • Oral test, Class test • Open book test

LESSON PLAN-II	
Class	XI
Subject	CHEMISTRY
Chapter	**Chemical Bonding and Molecular Structure (Part - II)**
Topic	Valence bond theory, Hybridisation, Molecular Orbital Theory
Gist of the Lesson/Concept	• Features of VBT, Hybridisation and MOT • Sigma and pi bond • Types of hybridisation • Linear combination of atomic orbitals LCAO • Types of Molecular Orbitals • Energy level diagram for Molecular Orbitals • Electronic Configuration and molecular behaviour • Bonding in some homo - nuclear diatomic molecules • Hydrogen bonding
Focussed skills/competencies	• Objectivity • Critical Thinking with Data & Graphical Interpretations • Scientific knowledge to reason • Numerical abilities
Targeted learning outcomes (TLO)	The learner will able to • Explain the overlapping of orbitals on the basis of VBT. • Explains the formation of sigma and pi bond • Identify the type of hybridisation in given molecules. • Understand how the linear combination of atomic orbitals takes place • Explain the condition for combination of atomic orbitals • Differentiate between Bonding MO and Antibonding MO • Arrange MO's in increasing order of their energies of given molecules • Calculate bond order of molecules and predict the nature of bond • Write the Electronic Configuration of given molecules. • Differentiate between intermolecular and intramolecular Hydrogen bonding

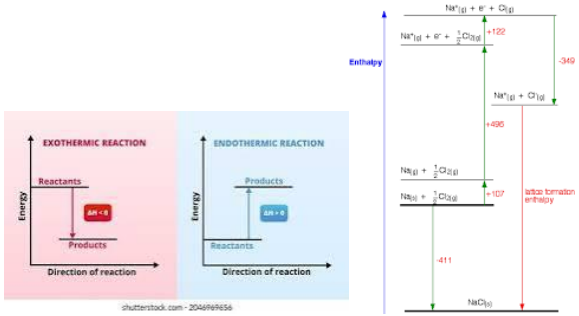
Pedagogical strategies planned for achieving the TLO	• Predict the nature of bond and strength of molecule • Show s-s, s-p and p-p overlapping. • Analyses diagram of formation of Bonding and Antibonding MO by linear combination of atomic orbitals. • Present learning by drawing mo diagram of given molecules. • Explain magnetic behaviour of molecules by Electronic Configuration. • Group task & peer learning.
Interdisciplinary linkages and infusion of life skills, values etc	• Applications of Valence bond theory, hybridmolecular orbital theory is used to explain the stability, bond length, magnetic behaviour of molecules. • Exhibits values of honesty, objectivity & rational thinking
Resources including ICT	• Charts ,Graphs, Powerpoint, animations. • ICT  
Inclusive practices	• HOTS questions • MLL questions • Use diagrams for explaining pictures & graphs. • Allow students to record classroom presentation or text in audio format. • Encourage group task & peer assistance. • Highlight and underline the key concept.
Assessment items for measuring the attainment of LOs	• Multiple choice questions with one correct answer. • Multiple choice questions with two correct answers. • Statement based questions • Assertion & reasoning based questions • Google forms • Case based questions • Oral testing. • Open book test.

CH-5: THERMODYNAMICS

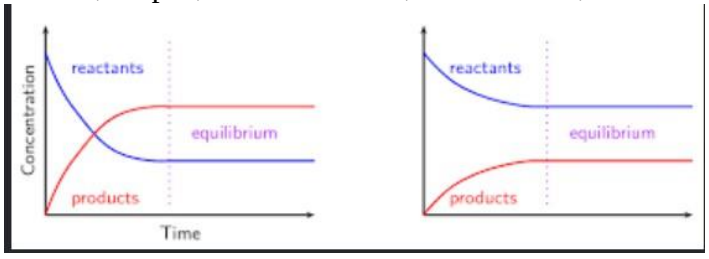
LESSON PLAN-I	
Class	XII
Subject	CHEMISTRY
Topic	**Thermodynamics (Part - I)**
Gist of the Lesson/Concept	Thermodynamics *system and Surroundings *close, open and isolated systems, *internal energy, *work and heat, *first law of thermodynamics *state functions: U, H, ΔU and ΔH standard states for *ΔH enthalpy changes forvarious types of reactions
Focussed skills/competencies	• Objectivity • Critical Thinking with Data & Graphical Interpretations • Scientific knowledge to reason • Experimentation • Numerical abilities
Targeted learning outcomes (TLO)	The learner will able to 1.Explain the terms system and surroundings 2. Discriminate between close, open and isolated systems. 3. Explain internal energy, work and heat. 4.state first law of Thermodynamics and express it mathematically. 5. Explain state functions: U, H and correlate ΔU and ΔH.
Pedagogical strategies planned for achieving the TLO	Analyses and interprets and calculates the data given if the question below A. In a process in which, 701 J of heat is absorbed by a system and 394 J of work is done by the system. What is the change in internal energy for the process? (b) Calculate the internal energy change when the system absorbs 5 KJ of heat and 1KJ of work is done. • Present learning through graphs and diagrams. • Experiments to explain thermodynamic processes in daily life. • Group task & peer learning.
Interdisciplinary linkages and infusion of life skills, values etc	• Correlation of thermodynamic processes in our everyday life such as cooking of food in pressure cooker etc. • Exhibits values of honesty, objectivity & rational thinking

Resources including ICT	Charts, Graphs, PowerPoint ,animations  **Fig. 6.1** *System and the surroundings*
Inclusive practices	• HOTS questions • MLL questions • Use embossed diagrams for explaining pictures & graphs. • Allow students to record classroom presentation or text in audio format. • Encourage group task & peer assistance for experiment work. • Highlight and underline the key concept.
Assessment items for measuring the attainment of LOs	• Multiple choice questions with one correct answer. • Multiple choice questions with two correct answers. • Statement based questions • Assertion & reasoning based questions • Google forms • Case based questions • Graph based questions • Oral testing. • Open book test.

LESSON PLAN-II	
Class	XI
Subject	CHEMISTRY
Topic	**THERMODYNAMICS (Part - II)**
Gist of the Lesson/Concept	Differentiate extensive and intensive properties. • The relationship between C_P and C_V for an Ideal Gas • Thermodynamic equations • Hess's law and its applications • Numerical of Hess's law • Enthalpy for different types of reactions. • Spontaneity and lattice enthalpy • Gibbs free energy and equilibrium.
Focussed skills/competencies	• Objectivity • Scientific knowledge to reason • Experimentation • Numerical ability • Data Analysis

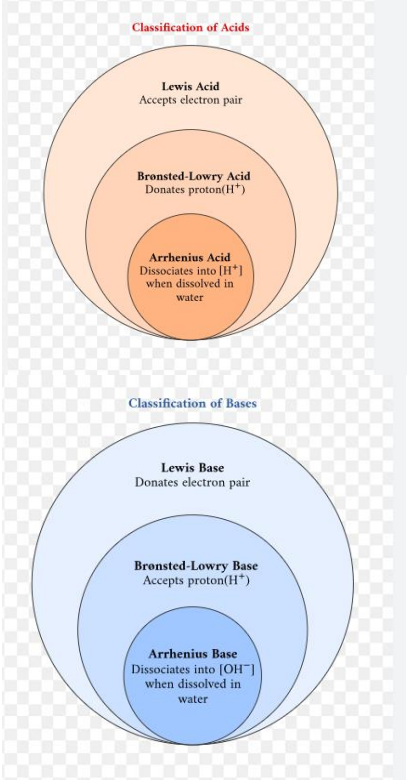
Targeted learning outcomes (TLO)	The learners will be able to • Differentiate extensive and intensive properties. • Understand the relationship between C_P and C_V for an Ideal Gas • Understands Thermodynamic equations • Understand Hess's law and its applications • Able to solve the numerical of Hess's law •comprehend enthalpies for different types of reactions. •Get to know the concept of spontaneity and lattice enthalpy. •Understand the relation between Gibbs free energy and equilibrium.
Pedagogical strategies planned for achieving the TLO	• Teaching Aids / Resources • Videos (Teaching and Explanation) • Flow charts • Interactive whiteboards • PPT • Concept Map • Additional Resources URL (Web links)
Interdisciplinary linkages and infusion of life skills, values etc	• Applications of Thermodynamics in our everyday life such as collaboration, time management, responsibility and creativity and innovation. • Exhibits values of Analysis, objectivity & Practical thinking.
Resources including ICT	Flow charts, PowerPoints, animations 
Inclusive practices	• HOTS questions • MLL questions • Allow students to record classroom presentation or text in audio format. • Encourage group task & peer assistance for experiment work. • Highlight and underline the key concept.
Assessment items for measuring the attainment of LOs	• Multiple choice questions with one correct answer. • Multiple choice questions with two correct answers. • Statement based questions • Assertion & reasoning based questions • Google forms • Case based questions • Numericals • Open book test.

CH-6: EQUILIBRIUM

LESSON PLAN-I	
Class	XI
Subject	CHEMISTRY
Topic/ Sub-topic	EQUILIBRIUM (Part - I)
Gist of the Lesson/Concept	● Dynamic nature of equilibrium ● Equilibrium in physical and chemical processes ● Characteristics of equilibria involved in physical and chemical processes ● Expression for equilibrium constant ● Relationship between Kc and Kp Relationship between equilibrium constant K, reaction Coefficient Q and Gibbs energy
Focussed skills/competencies	● Objectivity ● Critical Thinking with Data & Graphical Interpretations ● Scientific knowledge to reason ● Experimentation ● Numerical abilities
Targeted learning outcomes (TLO)	The learner will able to ● Define Equilibrium ● Understand the dynamic nature of equilibrium Chemical and physical processes ● Apply equilibrium constant expression to relate concentration of reactants and products at equilibrium ● Interprets graphical representation of concentration vs time ● Derive relationship between Kc and Kp ● Solve numericals based on Kc and Kp ● Worksheets with practice problems on predicting equilibrium shifts and calculating equilibrium constants
Pedagogical strategies planned for achieving the TLO	● Project based learning (experiments to show it will Librium in physical processes) ● DBL: Preparation of Flash cards and quizzes ● Present learning through graph ● Group task & peer learning. ● Coloured beads or candies to be used as a model to demonstrate the constant exchange of molecules between reactants and products
Interdisciplinary linkages and infusion of life skills, values etc	Importance of Chemical equilibria in numerous biological and environmental processes, for example transport and delivery of O_2 from lungs to muscles. ● Exhibits values of honesty, objectivity & rational thinking(shifting the equilibrium position to minimize the applied stress)
Resources including ICT	Charts ,Graphs, coloured beads, PowerPoint ,animations 

Inclusive practices	● HOTS questions ● MLL questions ● Use embossed diagrams for explaining pictures & graphs. ● Allow students to record classroom presentation or text in audio format. ● Encourage group task & peer assistance for experiment work. ● Highlight and underline the key concept.
Assessment items for measuring the attainment of LOs	● Multiple choice questions with one correct answer. ● Multiple choice questions with two correct answers. ● Statement based questions ● Assertion & reasoning based questions ● Google forms ● Case based questions ● Graph based questions ● Oral testing.

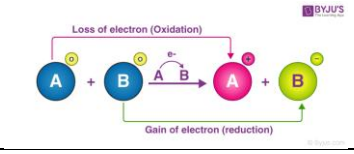
LESSON PLAN-II	
Class	XII
Subject	CHEMISTRY
Topic	**EQUILIBRIUM (PART II)**
Gist of the Lesson/Concept	• Factors affecting Equilibrium like pressure, temp., conc., inert gas, etc. • Le Chatelier's principle, its application with example • Ionic equilibrium in solution • Arrhenius, Bronsted Lowry & Lewis concept for acids & bases • Ionisation of acids & bases and ionisation constant of water & its ionic product • The pH scale • Ionisation constant of weak acid and weak base • Relation between K_a and K_b • Di & poly basic acids and bases • Factors affecting acid strength • Common Ion effect in the ionization of acids and bases • Hydrolysis of salt and the pH of their solutions • Buffer solutions • Solubility equilibria of sparingly soluble salts • Solubility product constant K_{SP} • Common Ion effect on solubility of ionic salts
Focussed skills/competencies	• Objectivity • Critical Thinking with Data & Graphical Interpretations • Scientific knowledge to reason • Experimentation • Numerical abilities
Targeted learning outcomes (TLO)	The learner will able to • To define Le Chatelier's principle and can apply on the given example of equilibria • To define Arrhenius concept, Bronsted Lowry concept and Lewis concept of acids and bases and give examples • To explain scientific terms like conjugate acids and bases,

	ionization constant common Ion effect, buffer solutions and solubility equilibria • To apply scientific concepts like acidity and basicity by using pH scale in daily life like acidic rain • To relate acid ionisation constant for acids and bases and find unknown values • Draw diagrams/ flow chart /concept map such as Lewis structure of simple molecules draw shapes of simple covalent molecules to differentiate acids and bases • To derive equation for ionization and dissociation constant • To relate process and phenomenon with causes and effects such as variation of ph of solution with the hydrogen ion concentration.
Pedagogical strategies planned for achieving the TLO	• Preparation of flash cards based on TLO's and (DBL) • Experiments to explain how to classify acids and bases based on concept • Analyse the pH value if concentration of hydrogen ion in a sample of soft drink is $3.8*10^{-3}$ M • Gather data for Ka and Kb for different acids and bases • Group task and peer learning • Collaboration of theoretical knowledge to practical knowledge in salt analysis • Experiments to find pH value
Interdisciplinary linkages and infusion of life skills, values etc	• Application of acids and bases concept in everyday life such as soap, vinegar, etc. • Objectivity and rational thinking • 
Resources including ICT	Charts, Graphs, PowerPoint, animations
Inclusive practices	• HOTS questions • MLL questions

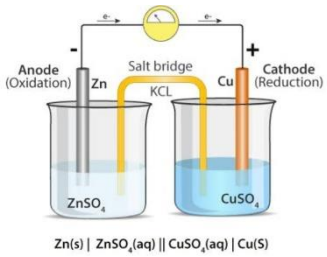
	• Use embossed diagrams for explaining pictures & graphs. • Allow students to record classroom presentation or text in audio format. • Encourage group task & peer assistance for experiment work. • Highlight and underline the key concept.
Assessment items for measuring the attainment of LOs	• Multiple choice questions with one correct answer. • Multiple choice questions with two correct answers. • Statement based questions • Assertion & reasoning based questions • Google forms • Case based questions • Graph based questions • Oral testing. • Open book test.

CH-7: REDOX REACTIONS

LESSON PLAN-I	
Class	XI
Subject	CHEMISTRY
Topic	**REDOX REACTIONS (PART I)**
Gist of the Lesson/Concept	● Concept of oxidation, reduction, oxidising agent and reducing agent ● Oxidation number: Definition, notations and application ● Types of redox reactions
Focussed skills/competencies	● Understanding ● Critical Thinking with Data & Graphical Interpretations ● Scientific knowledge to reason ● Classification ● Numerical abilities
Targeted learning outcomes (TLO)	The learner will able to ● Explain Electronic concept of oxidation and reduction ● Understand Basic principles involved in redox reactions ● Apply scientific reason for Mechanism of electron transfer involved in redox reactions ● Calculate oxidation numbers in terms of electron transfer ● Classify Various kinds of reactions in terms of redox reaction
Pedagogical strategies planned for achieving the TLO	● Introduction of topic by questioning method ● Discussing some curious question related to topic. ● Involvement of students in topics. ● Comparing different types of REDOX reactions ● Discussion of interesting facts about fractional oxidation no. ● Solving numericals based on oxidation no and stock notation. ● Performing oxidation & reduction titration in the lab. ● Present learning through flow charts. ● Group task & peer learning.

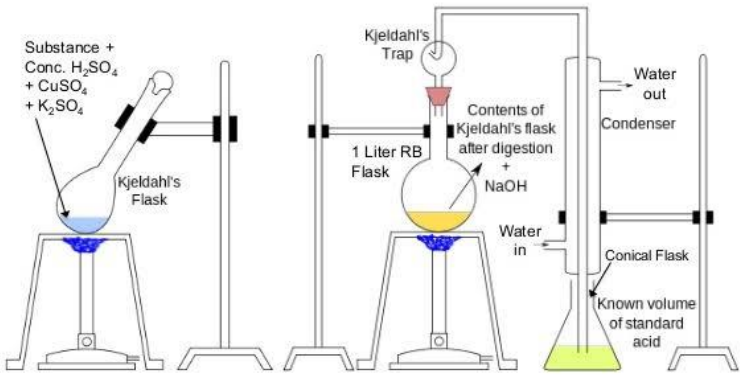
Interdisciplinary linkages and infusion of life skills, values etc	• Applications of REDOX reactions in our everyday life such as in pharmaceutical, biological, industrial and agricultural areas etc. • Exhibits values of honesty, objectivity & rational thinking
Resources including ICT	NCERT Textbooks,Charts ,Powerpoint ,animations 
Inclusive practices	• HOTS questions • MLL questions • Use embossed diagrams for explaining topics like REDOX reactions and electrode processes. • Allow students to record classroom presentations or text in audio format. • Encourage group task & peer assistance for experiment work. • Highlight and underline the key concept.
Assessment items for measuring the attainment of LOs	• Multiple choice questions with one correct answer. • Multiple choice questions with two correct answers. • Statement based questions • Assertion & reasoning based questions • Google forms • Case based questions • Oral testing. • Open book test.

LESSON PLAN-II	
Class	XI
Subject	CHEMISTRY
Topic	**REDOX REACTIONS (Part - II)**
Gist of the Lesson/Concept	• Disproportionation reaction • Predicting oxidation and reduction and finding out the oxidation number. • Balancing of redox reaction • Ion electron method • Half reaction method • Redox reactions as basis for titration • Redox reactions and electrode processes
Focussed skills/competencies	• Objectivity • Critical Thinking with Data & Graphical Interpretations • Scientific knowledge to reason • Experimentation • Numerical abilities
Targeted learning outcomes (TLO)	The learner will able to • Various kinds of reactions in terms of redox reactions • Balance redox equations using- • Oxidation number method • Half reaction method • Understand the electrochemistry of redox reactions as a tool for future knowledge.

Pedagogical strategies planned for achieving the TLO	• Analyses and interprets data from table of the standard electrode potentials • Present learning through flash cards • Gather data for K_H for comparing solubility of gases • Experiments to explain Daniell cell • Group task & peer learning.
Interdisciplinary linkages and infusion of life skills, values etc	• Exhibits values of honesty, objectivity & rational thinking • Experiential learning and learning by doing experiments And connecting the topic with the calculations of maths.
Resources including ICT	Charts, Graphs, PowerPoint, animation  $Zn(s) \mid ZnSO_4(aq) \parallel CuSO_4(aq) \mid Cu(S)$
Inclusive practices	• HOTS questions • MLL questions • Use embossed diagrams for explaining pictures & graphs. • Allow students to record classroom presentation or text in audio format. • Encourage group task & peer assistance for experiment work. • Highlight and underline the key concept.
Assessment items for measuring the attainment of LOs	• Multiple choice questions with one correct answer. • Multiple choice questions with two correct answers. • Statement based questions • Assertion & reasoning based questions • Google forms • Case based questions • Graph based questions • Oral testing. • Open book test.

CH-8: ORGANIC CHEMISTRY – SOME BASIC PRINCIPLES AND TECHNIQUES

LESSON PLAN-I	
Class	**XI**
Subject	**CHEMISTRY**
Topic	**ORGANIC CHEMISTRY: SOMAE BASIC PRINCIPLES AND TECHNIQUES (Part - I)**
Gist of the Lesson/Concept	• Isomerism – Structural and Stereoisomerism, • Homolytic and Heterotypic Fission, • Nucleophile and Electrophiles, • Carbocation, Carbanion and Free Radicals, • Inductive Effect (+I & -I), • Resonance (+R & -R), • Electromeric Effects (+E & -E), • Hyper-conjugation, • Purification Methods • Qualitative Analysis, • Quantitative Analysis - Dumas Method, Kjeldahl Method, Carius Method
Focused skills/competencies	• Objectivity • Scientific knowledge • Reasoning ability • Experimentation • Analysis • Numerical abilities
Targeted learning outcomes (TLO)	The learners will be able to • Comprehend the concept of organic reaction mechanism; • Analyze the influence of electronic displacements on structure and reactivity of compounds; • Identify various techniques used for purification of organic compounds; • Compose the chemical reactions involved in the qualitative analysis of organic compounds and summarize the principles involved in their analysis.
Pedagogical strategies planned for achieving the TLO	• Teaching Aids / Resources • Videos (Teaching and Explanation) • Scientific Apparatus • Interactive whiteboards • PPT • Demonstration • Concept Map • Additional Resources URL (Web links)
Interdisciplinary linkages and infusion of life skills, values etc	• Applications of Organic chemistry in our everyday life such as Medicines, Food, Clothing, Fuels. • Exhibits values of honesty, objectivity & Practical thinking. • Related with mathematics.
Resources including ICT	Charts, PowerPoints, Animations

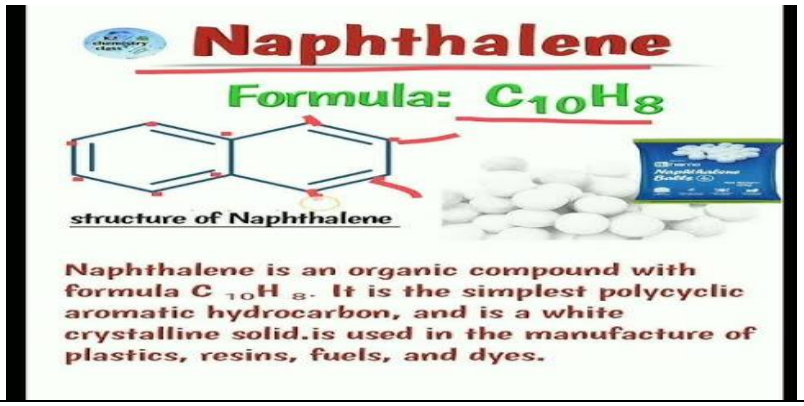
	
Inclusive practices	• HOTS questions • MLL questions • Allow students to record classroom presentation or text in audio format. • Encourage group task & peer assistance for experiment work. • Highlight and underline the key concept.
Assessment items for measuring the attainment of LOs	• Multiple choice questions with one correct answer. • Multiple choice questions with two correct answers. • Statement based questions • Competency based questions • Assertion & reasoning based questions • Google forms • Case based questions • Oral test • Open book test.

LESSON PLAN-II	
Class	XI
Subject	CHEMISTRY
Topic	**GENERAL ORGANIC CHEMISTRY (Part – II)**
Gist of the Lesson/Concept	• Interpretation of structure of molecules in different ways • Classify and give the nomenclature of organic compounds in trivial and IUPAC system • Differentiation between Benzoid and Non-Benzoid structure
Focussed skills/competencies	• Objectivity • Critical Thinking with Data & Graphical Interpretations • Scientific knowledge to reason • Experimentation
Targeted learning outcomes (TLO)	The learner will able to • Shape, hybridisation and structural representation of carbon compounds • Classify organic compounds focussing on the concepts revolving around aromaticity • Name different carbon compounds
Pedagogical strategies planned for achieving the TLO	• Explanation of different structures of atoms by using 3D Models • Comparing different atomic models • Students are given ball and straw to make different models of a compounds • Group task & peer learning.

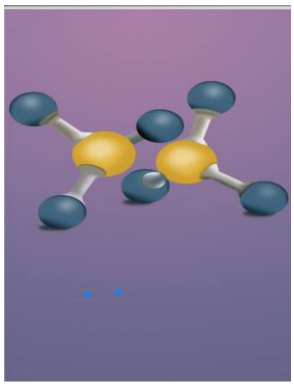
Interdisciplinary linkages and infusion of life skills, values etc	• Importance of organic compounds in day today life • Exhibits values of honesty, objectivity & rational thinking
Resources including ICT	Charts PowerPoint animations
Inclusive practices	• HOTS questions • MLL questions • Use embossed diagrams for explaining pictures & graphs. • Allow students to record classroom presentation or text in audio format. • Encourage group task & peer assistance for experiment work. • Highlight and underline the key concept.
Assessment items for measuring the attainment of LOs	• Multiple choice questions with one correct answer. • Multiple choice questions with two correct answers. • Statement based questions • Assertion & reasoning based questions • Google forms • Case based questions • Graph based questions • Oral testing. • Open book test.

CH-9: HYDROCARBONS

LESSON PLAN-I	
Class	XI
Subject	CHEMISTRY
Topic	**AROMATIC HYDROCARBONS (Part – I)**
Gist of the Lesson/Concept	• Nomenclature and isomerism • Huckel rule • Benzene- structure, preparation &chemical reactions • Functional groups & their directive influence in monosubstituted benzene
Focussed skills/competencies	• Objectivity • Critical Thinking • Analysis • Scientific knowledge to reason • Experimentation • Numerical abilities
Targeted learning outcomes (TLO)	The learner will able to - • Name the different kinds Of hydrocarbons according to common and IUPAC Nomenclature. Identify and write the structures of isomers of aromatic hydrocarbons . • Apply huckel rule. • Discuss on preparations and properties of arenes.

	• Explain resonance and extra stability of benzene. Describe directive influence of functional groups on the aromatic ring system. • Explain carcinogenicity and toxicity in aromatic hydrocarbons.
Pedagogical strategies planned for achieving the TLO	• Introduction of topic by questioning method. • Explaining mechanism of reactions. • Comparing different arenes models. • Discussing some curious question related to topic. • Involvement of students in topic. • Demonstrating different structure of atoms by using their 3D modals • Group task & peer learning.
Interdisciplinary linkages and infusion of life skills, values etc	• Applications of aromatic hydrocarbons in our everyday life such as model glues, toluene, naphthalene, for manufacturing of dyes, explosives, drugs, Phenanthrene, Plastic industry and petrochemical industries, etc. • Exhibits values of honesty, objectivity & rational thinking
Resources including ICT	Charts, PowerPoint, animations. 
Inclusive practices	• HOTS questions • MLL questions • Use embossed diagrams for explaining pictures & mechanism. • Allow students to record classroom presentation or text in audio format. • Encourage group task & peer assistance for experiment work. • Highlight and underline the key concept.
Assessment items for measuring the attainment of LOs	• Multiple choice questions with one correct answer. • Multiple choice questions with two correct answers. • Statement based questions • Assertion & reasoning based questions • Google forms • Case based questions • Reaction mechanism based questions • Oral testing. • Open book test.

LESSON PLAN-II	
Class	XI
Subject	CHEMISTRY
Topic	**Aliphatic hydrocarbons and their properties. (Part - II)**
Gist of the Lesson/Concept	1 Naming of hydrocarbon according to IUPAC system of nomenclature. 2 Isomerism in various hydrocarbon 3 Various methods of preparation of hydrocarbon 4 Distinguish between Alkanes aliens and alkynes. 5 Confirmation of ethane
Focussed skills/competencies	• Objectivity • Critical Thinking with conceptual understanding Interpretations • Scientific knowledge in IUPAC nomenclature • Explaining mechanism of reactions
Targeted learning outcomes (TLO)	The learner will able to • Able to do IUPAC Nomenclature as well as writing structure of Aliphatic hydrocarbon. • Able to learn various preparation method of aliphatic hydrocarbon. • Able to learn various physical and chemical properties of aliphatic compou ds • Able to differentiate between alkane alkene and alkynes. • Able to draw and Differentiate between various confirmation of ethane • Able to understand reaction mechanism of alkenes (symmetrical and unsymmetrical
Pedagogical strategies planned for achieving the TLO	• Explain to write IUPAC nomenclature of aliphatic compound • Present flow chart and flash cards to explain isomerism • Explain preparation methods and chemical properties of aliphatic compound using O lab • Presenting 3 D model of Confirmation of ethane • Explain reaction mechanism of adding halogen on unsymmetrical alkenes Emphasising Markonikov rule,Kharash effect and peroxide effect.
Interdisciplinary linkages and infusion of life skills, values etc	• Applications of aliphatic compounds as sources of energy and industrial process • Exhibits values of cooperation , objectivity & rational thinking

Resources including ICT	Charts 3D modelPowerpoint ,animations 
Inclusive practices	• HOTS questions • MLL questions • Use embossed diagrams for explaining pictures & structures. • Allow students to record classroom presentation or text in audio format. • Encourage group task & peer assistance for experiment work. • Highlight and underline the key concept.
Assessment items for measuring the attainment of LOs	• Multiple choice questions with one correct answer. • Multiple choice questions with two correct answers. • Statement based questions • Assertion & reasoning based questions • Google forms • Case based questions • Structure based question • Oral testing. • Open book test.