# KVS ZIET MUMBAI

## LESSON PLAN CLASS – XII

## SUBJECT - CHEMISTRY

# CLASS XII
# CH-1: SOLUTIONS

| LESSON PLAN-I | |
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| Class | XII |
| Subject | CHEMISTRY |
| Topic | SOLUTIONS PART I |
| Gist of the Lesson/Concept | ● Types of solutions, Expressing concentration of solutions solubility vapour pressure of liquid solutions and Dalton's law of partial pressures.<br>● Application of types of solutions, concentration of solutions solubility and vapour pressure of solutions<br>● Effect of temperature and pressure on solubility and various concentration terms of solutions.<br>● Merits and demerits of various terms of concentration of solutions |
| Focussed skills/competencies | ● Objectivity<br>● Critical Thinking with Data & Graphical Interpretations<br>● Scientific knowledge to reason<br>● Experimentation<br>● Numerical abilities |
| Targeted learning outcomes (TLO) | The learner will able to<br>● Define various types of solutions, concentrations of solutions solubility and vapour pressure.<br>● Compare homogeneous and heterogeneous mixtures molality and molarity.<br>● Analyses and interprets data of various concentration terms<br>● Apply scientific reasons for several applications in industry .<br>● Give uses types of solution, concentration terms and vapour pressure<br>● Solve numericals of concentration of solutions<br>● Correlate the various concentration terms. |
| Pedagogical strategies planned for achieving the TLO | ● Analyses and interprets various terms of concentrations of solutions.<br>● Gather data for mass percentage and volume percentage in various medicines<br>● Experiments to make standard molar solutions.<br>● Group task & peer learning. |
| Interdisciplinary linkages and infusion of life skills, values etc | ● Applications of various condition terms in our daily life.<br>● Exhibits values of honesty, objectivity & rational thinking. |
| Resources including ICT | Charts ,Graphs,Powerpoint ,animations |
| Inclusive practices | ● HOTS questions<br>● MLL questions<br>● Use embossed diagrams for explaining pictures & graphs.<br>● Allow students to record classroom presentation or text in audio format.<br>● Encourage group task & peer assistance for experiment work. |

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| | • Highlight and underline the key concept. |
| Assessment items for measuring the attainment of LOs | • Multiple choice questions with one correct answer.<br>• Multiple choice questions with two correct answers.<br>• Statement based questions<br>• Assertion & reasoning based questions<br>• Google forms<br>• Case based questions<br>• Graph based questions<br>• Oral testing.<br>• Open book test. |

| **LESSON PLAN-II** | |
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| Class | XII |
| Subject | CHEMISTRY |
| Topic | Solutions (part 2)<br>• Ideal and non-ideal solution<br>• Colligative properties and determination of molar mass<br>• Abnormal molar mass |
| Gist of the Lesson/Concept | • Difference between ideal and non-ideal solutions.<br>• Deviations of real solutions from Raoult's law.<br>• Description of colligative properties of solutions. and correlation with molar masses of the solute<br>• Abnormal colligative properties exhibited by some solids in solutions |
| Focussed skills/competencies | • Objectivity<br>• Critical Thinking with Data & Graphical Interpretations<br>• Scientific knowledge to reason<br>• Experimentation<br>• Numerical abilities |
| Targeted learning outcomes (TLO) | The learner will able to<br>• Differentiate ideal and non ideal solutions.<br>• Distinguish solutions of positive and negative deviation with examples.<br>• Explain deviations of real solutions from Raoult's law.<br>• Describe colligative properties of solutions and correlate these with molar masses of the solute<br>• Explain abnormal colligative properties exhibited by some solutes in solutions.<br>• Compute relative lowering of vapour pressure.<br>• Calculate elevation in boiling point and depression in freezing point.<br>• Determine molar masses of solutes by measuring osmotic pressure.<br>• Calculate abnormal molar masses in case of association or dissociation among solute particles by inclusion of Van't Hoff factor. |
| Pedagogical strategies | • Analysis and interpretation through graphs. |

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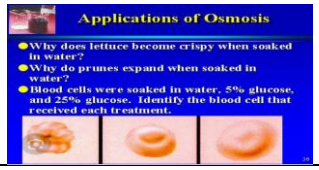
| planned for achieving the TLO | • Estimation of relative lowering of vapour pressure.<br>• Calculation of elevation of boiling point and depression of freezing point.<br>• Determination of molecular masses of different biomolecules.<br>• Experiments to explain uses of osmotic pressure<br>• Determination of abnormal molar masses..<br>• Group task & peer learning. |
| Interdisciplinary linkages and infusion of life skills, values etc | • Application in antifreeze.<br>• Applications of osmosis in intravenous injections shrinking and swelling of cells.<br>• Biological importance of the process osmosis.<br>• Exhibits values of objectivity & rational thinking |
| Resources including ICT | Charts ,Graphs,Powerpoint ,animations<br>  |
| Inclusive practices | • HOTS questions<br>• MLL questions<br>• Use embossed diagrams for explaining pictures & graphs.<br>• Allow students to record classroom presentation or text in audio format.<br>• Encourage group task & peer assistance for experiment work.<br>• Highlight and underline the key concept. |
| Assessment items for measuring the attainment of LOs | • Multiple choice questions with one correct answer.<br>• Multiple choice questions with two correct answers.<br>• Statement based questions<br>• Assertion & reasoning based questions<br>• Google forms<br>• Case based questions<br>• Graph based questions<br>• Oral testing.<br>• Open book test. |

# CH-2: ELECTROCHEMISTRY

| LESSON PLAN-I | |
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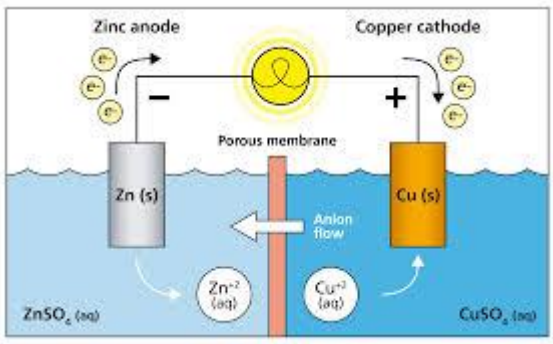
| Class | XII |
| Subject | CHEMISTRY |
| Topic | **Electrochemistry (Part - I)** |
| Gist of the Lesson/Concept | EMF of a cell, standard electrode potential, Nernst equation and its application to<br>chemical cells, Relation between Gibbs energy change and EMF of a cell with Numerical<br>Faraday's Laws of electrolysis with Numerical & products of electrolysis |
| Focussed skills/competencies | • Objectivity<br>• Critical Thinking with Data<br>• Scientific knowledge to reason<br>• Experimentation<br>• Numerical abilities |
| Targeted learning outcomes (TLO) | The learner will able to<br>• Define EMF of cell, Nernst equation& Faraday's Laws of electrolysis<br>• Compare the Electrolytic cell and Electrochemical cell.<br>.<br>• Apply scientific reasons for several applications in industry and explains.<br>• Give uses of Electrolytic cell and Electrochemical cell.<br>• Solve numericals of Nernst equation<br>• Correlate with the redox reactions |
| Pedagogical strategies planned for achieving the TLO | • Analyses and interprets data of Gibbs energy change and EMF of the cell<br>• Present learning through Galvanic cell.<br>• Experiments to explain uses of electrochemical cell & Electrolytic cell<br>• Group task & peer learning. |
| Interdisciplinary linkages and infusion of life skills, values etc | • Electrochemical cells are used in torches, digital watches, military applications, corrosion protection, etc. The production of high-purity lead, zinc, aluminum, and copper involves the use of electrolytic cells. They use it to analyze a solution for trace amounts of metal ions.<br>• Exhibits values of honesty, objectivity & rational thinking |
| Resources including ICT | Charts , Graphs, PowerPoint, animations<br>  |
| Inclusive practices | • HOTS questions<br>• MLL questions |

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

| **LESSON PLAN-II** | |
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| Class | XII |
| Subject | CHEMISTRY |
| Topic | ELECTROLYTIC CONDUCTANCE |
| Gist of the Lesson/Concept | • Resistance, resistivity<br>• Conductance, conductivity<br>• Cell constant<br>• Molar conductivity<br>• Wheatstone bridge, conductivity cell<br>. |
| Focussed skills/competencies | • Objectivity<br>• Critical Thinking with Data<br>• Scientific knowledge to reason<br>• Analysis<br>• Numerical abilities |
| Targeted learning outcomes (TLO) | The learner will able to<br>• Define resistance, conductance, conductivity, molar conductivity.<br>• Derive the formula for the same.<br>• Derive the units of resistance, resistivity,conductance,conductivity,molar conductivity.<br>• Analyse the data given for conductivity and molar conductivity of KCl at 298.15 K.<br>• Formulate the expression for conductivity.<br>• Solve numericals of conductivity and molar conductivity.<br>• Conversion of units.<br>• Describe the method for measurement of conductivity of electrolytic solution and calculation of their molar conductivity.<br>• Justify the use of conductivity cell.<br>• Observe the table for conductivity for some different materials. |
| Pedagogical strategies planned for achieving the TLO | • Analysis and derivation of formula of conductance, conductivity and molar conductivity.<br>• Present learning through discussion.<br>• Discussion on measurement of conductance.<br>• Solution of numericals. |

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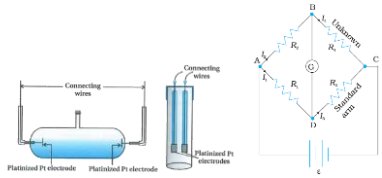
| | ● Group task and peer learning. |
| Interdisciplinary linkages and infusion of life skills, values etc | .<br>● Exhibits values of honesty, objectivity & rational thinking |
| Resources including ICT | Charts ,Graphs,Powerpoint ,animations<br>  |
| Inclusive practices | ● HOTS questions<br>● MLL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

# CH-3: CHEMICAL KINETICS

| LESSON PLAN-I | |
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| Class | XII |
| Subject | CHEMISTRY |
| Topic | **CHEMICAL KINETICS (Part-I)** |
| Gist of the Lesson/Concept | • Term: Chemical Kinetics.<br>• Rate of a reaction (Average and Instantaneous).<br>• Rate of a reaction in terms of change in concentration of either of the reactants or products with time.<br>• Factors affecting rate of reaction: concentration, temperature, catalyst.<br>• Rate expression and rate constant.<br>• Order of reaction.<br>• Molecularity of a reaction.<br>• Elementary and complex reactions. |
| Focussed skills/competencies | • Analytical Skills<br>• Critical Thinking with data & graphical interpretations<br>• Problem-Solving Skills<br>• Conceptual Understanding<br>• Communication Skills<br>• Experimental Skills<br>• Objectivity |
| Targeted learning outcomes (TLO) | The learner will able to<br>• Define the term chemical kinetics.<br>• Define the average and instantaneous rate of a reaction and analyse and interpret reaction rates and how they change over time, using mathematical expressions and graphical data.<br>• Express the rate of a reaction in terms of change in concentration of either of the reactants or products with time.<br>• Discuss the dependence of rate of reactions on concentration, temperature and catalyst.<br>• Define rate expression and rate constant.<br>• Understand order of reaction.<br>• Define molecularity of a reaction.<br>• Differentiate between the molecularity and order of a reaction.<br>• Solve numerical problems related to rate laws, rate constants, and reaction orders.<br>• Distinguish between elementary and complex reactions. |
| Pedagogical strategies planned for achieving the TLO | • **Use of visual aids** like graphs and charts to illustrate concepts such as reaction rates (average rate of reaction and instantaneous rate) and concentration changes.<br>• Taking example of day today life.<br>• **Use of computer simulations** to visualise reaction mechanisms, molecularity and order to understand the topic in a better way.<br>• **Hands-on experiment** to study the effect of change in the concentration and temperature on the rate of reaction between sodium thiosulphate and HCl. |
| Interdisciplinary linkages and infusion of life skills, values | • Teaching chemical kinetics offers a unique opportunity to **integrate interdisciplinary perspectives** and life skills.<br>• Understanding reaction rates involves **Mathematics** for |

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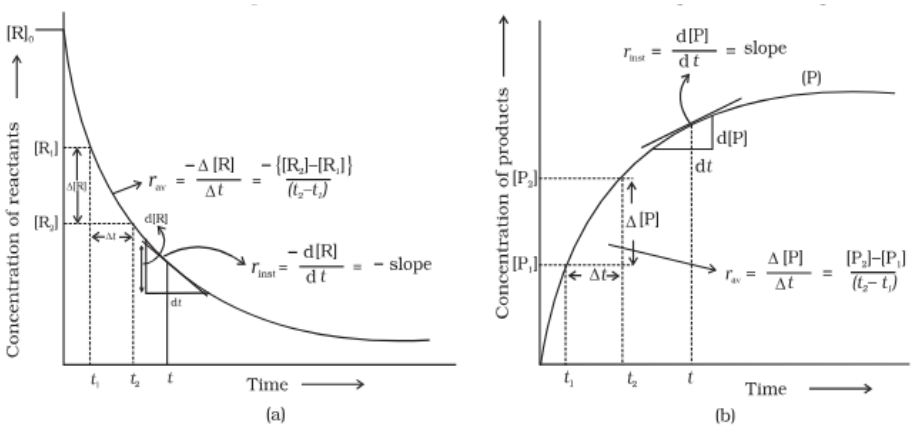
| etc | calculations, critical thinking for analysing data, and communication skills for presenting findings.<br>• Values such as **accuracy and persistence** are essential in conducting experiments and interpreting results.<br>• Infusing these elements not only enhances **scientific understanding** but also cultivates a **holistic approach** to learning that prepares students for real-world challenges beyond the laboratory. |
| Resources including ICT | Charts, Graphs, power point presentations, animations, flash cards, concept maps.<br>  <br>*Fig. 4.1: Instantaneous and average rate of a reaction* |
| Inclusive practices | • HOTS questions.<br>• MLL questions.<br>• Use embossed diagrams for explaining pictures & graphs.<br>• Allow students to record classroom presentation or text in audio format.<br>• Encourage group task & peer assistance for experiment work.<br>• Highlight and underline the key concept. |
| Assessment items for measuring the attainment of LOs | • Concept maps will be drawn linking key terms and concepts.<br>• Multiple choice questions with one correct answer.<br>• Multiple choice questions with two correct answers.<br>• Statement based questions<br>• Assertion & reasoning based questions<br>• Google forms and quizizz<br>• Case based questions<br>• Graph based questions<br>• Oral testing.<br>• Open book test. |

| LESSON PLAN-II | |
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| Class | XII |
| Subject | CHEMISTRY |
| Topic | **CHEMICAL KINETICS II (INTEGRATED RATE EQUATION)** |
| Gist of the Lesson/Concept | • Zero order<br>• First order<br>• Half life of reaction<br>• Temperature dependence of rate of reaction<br>• Arrhenius equation<br>• Activation energy<br>• Effect of catalyst<br>• Collision Theory |
| Focussed skills/competencies | • Objectivity<br>• Critical Thinking with Data & Graphical Interpretations<br>• Scientific knowledge to reason<br>• Experimentation<br>• Numerical abilities |
| Targeted learning outcomes (TLO) | The learner will able to<br>• derive and apply integrated rate laws for different reaction orders (zero, first, and second).<br>• Connect the integrated rate laws with the molecular mechanisms of reactions, emphasizing the relationship between rate constants and concentrations.<br>• Solve Numerical Problems: Apply integrated rate laws to solve numerical problems involving initial concentrations, reaction times, and rate constants.<br>• Graphical Representation: Interpret and draw graphs related to integrated rate laws, such as concentration vs. time and ln(concentration) vs. time graphs<br>• Know about Arrhenius equation and its application. |
| Pedagogical strategies planned for achieving the TLO | • Demonstrate the derivation of integrated rate laws for zero and first order reaction<br>• Show how to integrate the differential equations and derive the equations that relate concentrations to time.<br>• Use graphs to illustrate the relationships described by integrated rate laws (e.g., concentration vs. time, ln(concentration) vs. time).<br>• Discuss how the slope and intercept of these graphs relate to reaction orders and rate constants.<br>• Highlight applications of integrated rate laws in various fields such as pharmacokinetics, environmental chemistry, and industrial processes.<br>• Use of power point presentation for recapitulation. |
| Interdisciplinary linkages and infusion of life skills, values etc | • Mathematics<br>• Biology – enzyme catalyst<br>• physics |
| Resources including ICT | Charts , Graphs, PowerPoint, animations |
| Inclusive practices | • HOTS questions |

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| | • MLL questions<br>• Use of graphs for explaining concepts.<br>• Allow students to perform experiments.<br>• Encourage group task & peer assistance for experiment work.<br>• Highlight and underline the key concept. |
| Assessment items for measuring the attainment of LOs | • Multiple choice questions with one correct answer.<br>Statement based questions<br>• Assertion & reasoning based questions.<br>Case based questions.<br>• Graph based questions<br>• Oral testing. |

## CH-4: d & f BLOCK ELEMENTS

| **LESSON PLAN-I** | |
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| Class | XII |
| Subject | CHEMISTRY |
| Topic | **The d- and -f block elements (Part -1)** |
| Time | |
| Gist of the Lesson/Concept | • Position of transition elements in modern periodic table .<br>• Name , series and electronic configuration of transition elements**(d-block ).**<br>**Properties of transition elements (d- block )**<br>• Atomic size,<br>• Oxidation states ,<br>• Melting point,<br>• Catalytic properties ,<br>• Alloy formation of coloured compounds ,<br>• Magnetic properties<br>• Chemical reactivity and $E^0$ values<br>• Formation of interstitial compounds<br>• Formation of complex compounds |
| Focussed skills/competencies | • Objectivity<br>• Critical Thinking with Data & Graphical Interpretations<br>• Scientific knowledge to reason.<br>• Understanding by numerical values .<br>• Experimentation<br>• Observation |
| Targeted learning outcomes (TLO) | The learner will able to<br>• Know about name, series and electronic configuration of transition elements **(d- block ).**<br>• Position of transition elements in modern periodic table .<br>• Properties of transition elements **(d- block )** and trends in modern periodic table . |

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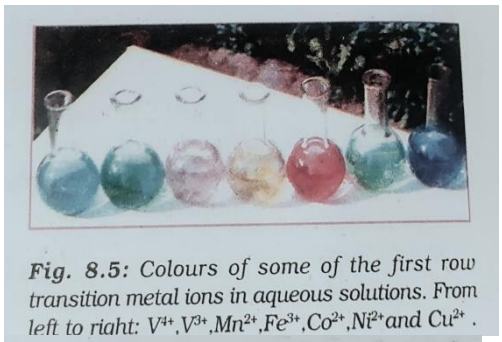
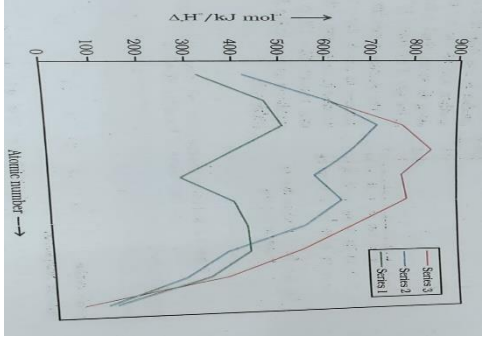
| Pedagogical strategies planned for achieving the TLO | • Analyses and interprets data of variation in properties of d- block elements.<br>• Present learning through graphs.<br>• Gather data of coloured compounds of d block elements.<br>• Group task & peer learning. |
| Interdisciplinary linkages and infusion of life skills, values etc | • Many chemical reactions are catalysed by d block elements , transition compounds are used in photography , formation of plastics ,enamels ,paints etc. |
| Resources including ICT | Charts ,Graphs,Powerpoint ,table<br>  <br>***Fig. 8.5:*** *Colours of some of the first row transition metal ions in aqueous solutions. From left to riaht:* $V^{4+}$, $V^{3+}$, $Mn^{2+}$, $Fe^{3+}$, $Co^{2+}$, $Ni^{2+}$ *and* $Cu^{2+}$ .<br>  <br><br>**Table 8.3: Oxidation States of the first row Transition Metals (the most common ones are in bold types)**<br>Sc Ti V Cr Mn Fe Co Ni Cu Zn<br>+3 +2 +3 +4 +2 +3 +4 +5 +2 +3 +4 +5 +6 +2 +3 +4 +5 +6 +7 +2 +3 +4 +6 +2 +3 +4 +2 +3 +4 +1 +2 +2 |
| Inclusive | • HOTS questions<br>• MLL questions<br>• Use embossed diagrams for explaining pictures & graphs.<br>• Allow students to record classroom presentation or text in audio format.<br>• Encourage group task & peer assistance for experiment work.<br>• Highlight and underline the key concept. |

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

| **LESSON PLAN-II** | |
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| Class | XII |
| Subject | CHEMISTRY |
| Chapter | d and f block element (Part - II) |
| Topic | Oxides and oxoanions, f block elements (Lanthanoid and Actinoid) |
| Gist of the Lesson/Concept | • Oxides and Oxoanions of metals<br>• Symbols, Name and Electronic Configuration of Lanthanoids and Actinoid<br>• Atomic and Ionic size of f block elements<br>• Oxidation states of Lanthanoids and actinoids<br>• Physical and chemical properties of lanthanoids and Actinoids. |
| Focussed skills/competencies | • Objectivity<br>• Critical Thinking with Data & Graphical Interpretations<br>• Scientific knowledge to reason. |
| Targeted learning outcomes (TLO) | The learner will able to<br>• Draw the structure of chromate ion and permanganate ion<br>• Write the reaction of K2Cr2O7 and KMnO4 in acidic and basic medium.<br>• Identify the name of element by their symbols.<br>• Write Electronic Configuration of given atomic no.s<br>• Explain the change in atomic and Ionic radii on increasing atomic no.<br>• Describe the more stable oxidation state of the lanthanoids and Actinoids.<br>• Explain the physical properties like melting point, conductivity and Density of lanthanoids.<br>• Explain the chemical behaviour of lanthanum with different reagents<br>• Application of lanthaniods and Actinoids in daily life |
| Pedagogical strategies planned for achieving the TLO | • Identify the products of reaction of KMnO4 in acidic and basic medium.<br>• Analyses and interprets variation of Ionic radii with atomic no.<br>• Write the Electronic Configuration of lanthanoids and Actinoids.<br>• Analyze the variation in oxidation states of lanthanoids<br>• Explain the chemical behaviour of lanthanum<br>• Group task & peer learning. |
| Interdisciplinary linkages and infusion of life skills, values etc | • Applications of studying their physical and chemical behaviour helps to use them in our daily life.<br>• Exhibits values of honesty, objectivity & rational thinking |

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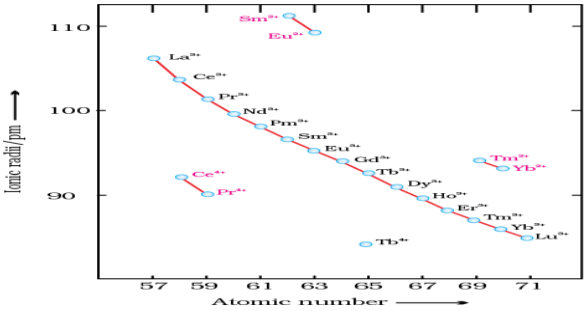
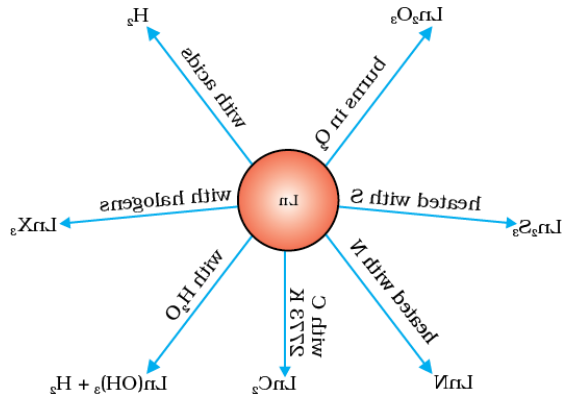
| Resources including ICT | • Charts ,Graphs, Powerpoint, animations.<br>• ICT<br>  <br><br>  <br> |
| Inclusive practices | • HOTS questions<br>• MLL questions<br>• Use diagrams for explaining pictures & graphs.<br>• Allow students to record classroom presentation or text in audio format.<br>• Encourage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

# CH-5: CO-ORDINATION COMPOUNDS

| LESSON PLAN-I | |
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| Class | XII |
| Subject | CHEMISTRY |
| Topic | **COORDINATION COMPOUNDS (Part - I)** |
| Gist of the Lesson/Concept | • Double salt , Coordination compound, Ligands & its types , Chelate ligand, Ambidentate ligand, Coordination number, Oxidation number, Homoleptic complexes, Heteroleptic complexes<br>• IUPAC nomenclature of mononuclear coordination compounds<br>• Structural isomerism linkage isomerism, ionisation isomerism, coordination isomerism & solvate (hydrate) definitions & examples<br>• Stereoisomerism ( Geometrical isomerism & Optical)<br>• VBT (Magnetic behaviour, Hybridization, Shape of following. inner or outer orbital complex) |
| Focussed skills/competencies | • Objectivity<br>• Critical Thinking with Data<br>• Scientific knowledge to reason<br>• Experimentation<br>• Numerical abilities |
| Targeted learning outcomes (TLO) | The learner will able to<br>• Define Coordination compound, Ligands & its types , Chelate ligand, Ambidentate ligand, Coordination number<br>• Compare the Homoleptic complexes, Heteroleptic complexes.<br>.<br>• Apply scientific reasons for several applications in industry and explains.<br>• Give uses of metallurgy,therapeutic chelating agents,chemical analysis,catalysis and detergents.<br>• Solve numericals of coordination number<br>• Correlate with the geometry |
| Pedagogical strategies planned for achieving the TLO | • Analyses and interprets data of geometric isomerism and optical isomerism<br>• Present learning through VBT<br>• Experiments to explain uses of coordination compounds<br>• Group task & peer learning. |
| Interdisciplinary linkages and infusion of life skills, values etc | • uses of metallurgy,therapeutic chelating agents,chemical analysis,catalysis and detergents.<br>• Exhibits values of honesty, objectivity & rational thinking |
| Resources including ICT | Charts ,Graphs,Powerpoint ,animations |

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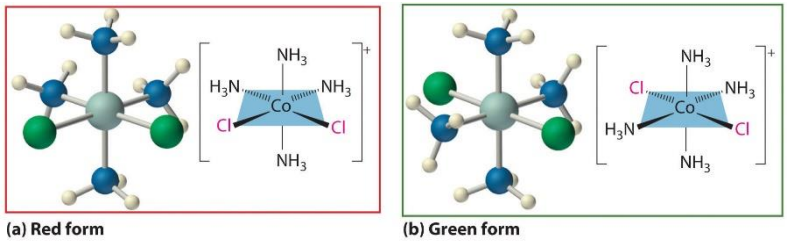
| |  |
| Inclusive practices | • HOTS questions<br>• MLL questions<br>• Use embossed diagrams for explaining pictures & graphs.<br>• Allow students to record classroom presentation or text in audio format.<br>• Encourage group task & peer assistance for experiment work.<br>• Highlight and underline the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

**LESSON PLAN-II**

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| Class | XII |
| Subject | CHEMISTRY (Part - II) |
| Topic | **Crystal Field Theory, Colour in coordination compounds, Bonding in metal carbonyl, Importance and application of coordination compounds** |
| Gist of the Lesson/Concept | • Introduction to crystal field theory<br>• Colour in coordination compounds<br>• Limitations of crystal field theory<br>• Stability of coordination compounds<br>• Importance and application of coordination compounds |
| Focussed skills/competencies | • Objectivity<br>• Critical Thinking<br>• Scientific knowledge to reason<br>• Experimentation |
| Targeted learning outcomes (TLO) | The learner will be able to-<br>• Understand the crystal field theory<br>• Describe how d-orbital splitting influences the color and magnetic properties of coordination compounds.<br>• Explore how the absorption of light relates to the electronic transitions within transition metal complexes.<br>• Relate the observed colors of coordination compounds to their |

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| | structure and electronic configuration.<br>• Identify the diverse applications of coordination compounds in medicine, industry, and catalysis.<br>• Draw structures showing bonding in metal carbonyl<br>□ Understand their role in biological systems |
| Pedagogical strategies planned for achieving the TLO | • Provide ample practice problems and questions related to Crystal Field Theory<br>• Use case studies to demonstrate the importance of coordination compounds in various applications such as medicine<br>• Utilize interactive online tools and animations to illustrate concepts such as d-orbital splitting and bonding in metal carbonyls.<br>• Implement formative assessments such as quizzes, short answer questions, and concept maps to gauge student understanding throughout the learning process. |
| Interdisciplinary linkages and infusion of life skills, values etc | Integrate the topic with<br>• Mathematical skills – graph , data interpretation<br>• Art – Drawing<br>• Explore the environmental impact of coordination compounds used in industry and medicine. |
| Resources including ICT | • Textbooks and Reference Books<br>• Online Educational Platforms<br>• Simulations and Virtual Labs<br>• Interactive Whiteboards |
| Inclusive practices | • HOTS questions<br>• MLL questions<br>• Allow students to record classroom presentation or text in audio format.<br>• Encourage group task & peer assistance for experiment work.<br>• Highlight and underline the key concept. |
| Assessment items for measuring the attainment of LOs | • Multiple choice questions with one correct answer.<br>• Multiple choice questions with two correct answers.<br>• Statement based questions<br>• Assertion & reasoning based questions<br>• Case based questions<br>• Oral testing. |

# CH-6: HALOALKANES AND HALOARENES

| LESSON PLAN-I | |
|---|---|
| Class | XII |
| Subject | CHEMISTRY |
| Topic | **HALOALKANES (Part - I)** |
| Gist of the Lesson/Concept | • Classification<br>• Nomenclature<br>• Nature of C-X bond<br>• Methods of preparation<br>• Physical properties<br>• Chemical reactions<br>• SN1 and SN2 reactions |
| Focussed skills/competencies | • Objectivity<br>• Critical Thinking<br>• Scientific knowledge to reason<br>• Experimentation<br>• Inference |
| Targeted learning outcomes (TLO) | The learner will able to<br>• Define haloalkanes and understand their nomenclature.<br>• Discuss the physical properties and chemical reactions of haloalkanes.<br>• Differentiate between SN1 and SN2 reaction.<br>• Analyze the environmental and health impacts of haloalkanes.<br>• Write the order of reactivity<br>• Apply the knowledge of haloalkanes in practical scenarios |
| Pedagogical strategies planned for achieving the TLO | • Constructive approach – discuss where students construct their understanding.<br>• Problem solving exercise , case studies<br>• Quizzes , immediate feedback<br>• Group task & peer learning.<br>• Virtual labs , multimedia presentation |
| Interdisciplinary linkages and infusion of life skills, values etc | • Ozone depletion – haloalkanes specially CFCs<br>• Pharmacology – uses in pharmaceuticals<br>• Link this topic with environmental impact and policies . |

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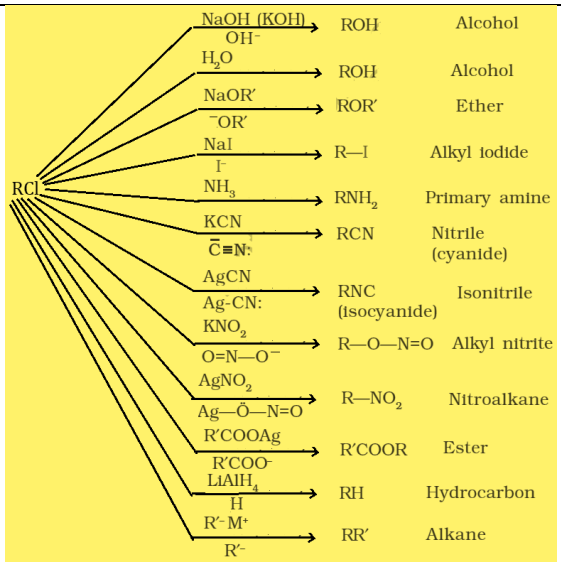
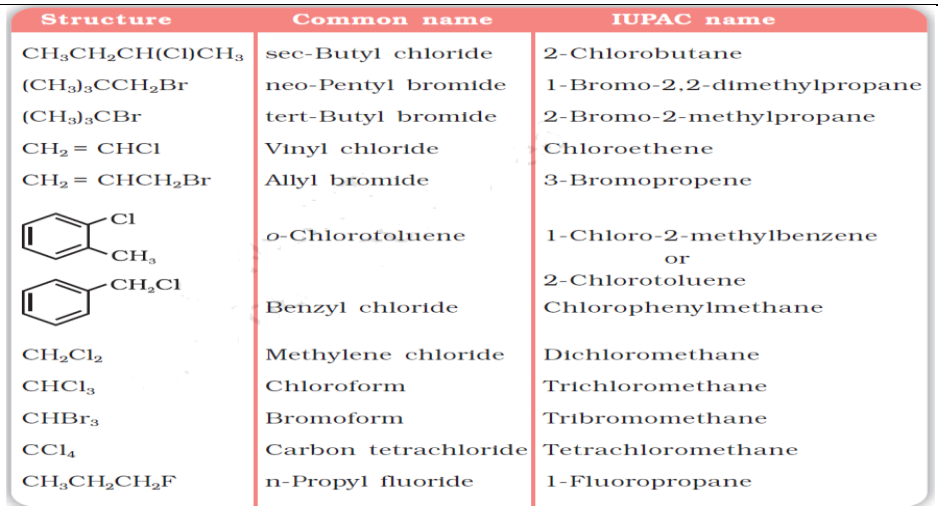
| Resources including ICT<br>Powerpoint ,animations | Powerpoint ,animations ,  |
| Powerpoint ,animations |  |
| Inclusive practices | • Display molecular structure of different haloalkanes<br>• Encourage group task & peer assistance for experiment work.<br>• Engage with real life situation. |
| Assessment items for measuring the attainment of LOs | • Multiple choice questions with one correct answer.<br>• Statement based questions<br>• Assertion & reasoning based questions<br>• Google forms<br>• Case based questions |

| Structure | Common name | IUPAC name |
|---|---|---|
| $CH_3CH_2CH(Cl)CH_3$ | sec-Butyl chloride | 2-Chlorobutane |
| $(CH_3)_3CCH_2Br$ | neo-Pentyl bromide | 1-Bromo-2,2-dimethylpropane |
| $(CH_3)_3CBr$ | tert-Butyl bromide | 2-Bromo-2-methylpropane |
| $CH_2 = CHCl$ | Vinyl chloride | Chloroethene |
| $CH_2 = CHCH_2Br$ | Allyl bromide | 3-Bromopropene |
|  | *o*-Chlorotoluene | 1-Chloro-2-methylbenzene or 2-Chlorotoluene |
|  | Benzyl chloride | Chlorophenylmethane |
| $CH_2Cl_2$ | Methylene chloride | Dichloromethane |
| $CHCl_3$ | Chloroform | Trichloromethane |
| $CHBr_3$ | Bromoform | Tribromomethane |
| $CCl_4$ | Carbon tetrachloride | Tetrachloromethane |
| $CH_3CH_2CH_2F$ | n-Propyl fluoride | 1-Fluoropropane |

| **LESSON PLAN-II** | |
|---|---|
| Class | XII |
| Subject | CHEMISTRY |
| Chapter | **HALOARENES (Part - II)** |
| Gist of the Lesson/Concept | • Introduction, classification & IUPAC nomenclature of Haloarenes<br>• Physical properties of Haloarenes<br>• Preparation of Haloarenes<br>• Structure of Haloarenes<br>• Stereochemistry of reaction mechanism |

| | |
|---|---|
| | • Chemical properties of Haloarenes<br>• Applications of organometallic compounds<br>• Environmental effects of polyhalogen compound |
| Focussed skills/competencies | • Objectivity<br>• Critical Thinking<br>• Scientific knowledge to reason<br>• Experimentation |
| Targeted learning outcomes (TLO) | The learner will able to able to recognize<br>• Structures alkyl halides<br>• Able to convert given name of alkyl halides to structure.<br>• Able to write the order of reactivity of different halogen derivatives.<br>• Able to describe different classes of halogen compounds.<br>• Able to write down structure of halogen compounds.<br>• Use Stereochemistry as a tool for understanding the reaction mechanism<br>• Appreciate the Applications of organometallic compounds<br>• Highlight the Environmental effects of polyhalogen compounds |
| Pedagogical strategies planned for achieving the TLO | • Explaining the structure of molecule using modals<br>• Performing tests and reactions in lab to understand the properties of halogen compounds.<br>• Teaching by interconversion chart.<br>• Make the student practice reactions.<br>• Teaching by comparison the chemical and physical properties of halogen compounds. |
| Interdisciplinary linkages and infusion of life skills, values etc | • Applications of Haloalkanes & Haloarenes like flame retardants, propellants, solvents, pharmaceuticals, refrigerants, fire extinguishers, and many more.<br>• Exhibits values of honesty, objectivity & rational thinking |
| Resources including ICT | Charts, PowerPoint, animations |
| Inclusive practices | • HOTS questions<br>• MLL questions<br>• Use Charts or flash cards for explaining name reactions.<br>• Allow students to record classroom presentation or text in audio format.<br>• Encourage group task & peer assistance for experiment work.<br>• Highlight and underline the key concept. |
| Assessment items for measuring the attainment of LOs | • Multiple choice questions with one correct answer.<br>• Multiple choice questions with two correct answers.<br>• Statement based questions<br>• Assertion & reasoning based questions<br>• Google forms<br>• Case based questions<br>• Oral testing.<br>• Open book test. |

# CH-7: ALCOHOL, PHENOL AND ETHERS

| LESSON PLAN-I | |
|---|---|
| Class | XII |
| Subject | CHEMISTRY |
| Unit | **Alcohol Phenol and ether (Part - I)** |
| Gist of the Lesson/Concept | • Classification and Nomenclature of alcohol<br>• General methods of preparation of alcohol<br>• Physical and chemical properties of alcohol<br>• Distinction test for 1°, 2° & 3° alcohol<br>• Reaction mechanism of acid catalysed hydration of alkene<br>• Commercial applications of alcohol |
| Focussed skills/competencies | • Objectivity<br>• Critical Thinking with reasoning<br>• Scientific knowledge to reason<br>• Experimentation |
| Targeted learning outcomes (TLO) | The learner will able to<br>• Classify alcohol on the basis of their properties ;primary, secondary and tertiary alcohols.<br>• Relates processes and phenomena with causes such as physical properties of alcohol with their structures.<br>• Write physical and chemical reactions of alcohol.<br>• Distinguish between 1°, 2° & 3° alcohol.<br>• Understand the methods of preparation of alcohol.<br>• Give uses of alcohol in industries and in daily life. |
| Pedagogical strategies planned for achieving the TLO | • Write formulae of alcohol, chemical equations, nomenclature etc, using paper and pen.<br>• Interactive ICT simulations or games of cards.<br>• Collect information on denatured, absolute, spirit alcohol.<br>• Experiments to distinguish alcohols.<br>• Group task & peer learning. |
| Interdisciplinary linkages and infusion of life skills, values etc | • Applications of alcohol in our everyday life such as drinking beverages, medicines and in industries etc.<br>• Exhibits values of honesty, objectivity & rational thinking |
| Resources including ICT | Charts, Powerpoint, animations |
| Inclusive practices | • HOTS questions<br>• MLL questions<br>• Encourage group task & peer assistance for experiment work.<br>• Highlight and underline the key concept. |
| Assessment items for measuring the attainment of LOs | • Multiple choice questions with one correct answer.<br>• Multiple choice questions with two correct answers.<br>• Statement based questions<br>• Assertion & reasoning based questions<br>• Google forms<br>• Case based questions<br>• Oral testing.<br>• Open book test. |

| LESSON PLAN-II | |
|---|---|
| Class | XII |
| Subject | CHEMISTRY |
| Topic | ALCOHOL, PHENOL AND ETHERS (Part – II) |
| Gist of the Lesson/Concept | ● common name and IUPAC name of phenol<br>● Preparation of phenol<br>● Physical properties of phenols<br>● Comparison of acidity of alcohols and phenols<br>● Chemical reaction involving cleavage of O-H bond<br>● Chemical reactions involving the cleavage ofC-O bond<br>● Directive effect of electron releasing group and electron withdrawing gp on phenols<br>● Electrophillic aromatic substitution |
| Focussed skills/competencies | ● Objectivity<br>● Critical Thinking,analysis<br>● Scientific knowledge to reason<br>● Experimentation<br>● Classification |
| Targeted learning outcomes (TLO) | The learner will able to<br>learn the IUPAC name of phenols<br>● Compare the boiling point of alcohol and phenol<br>● Know the methods of preparation of phenol mechanism of reaction.<br>● Application of phenol<br>● complete the reactions<br>● Increasing order of acid strength of phenol<br>Important Conversions. |
| Pedagogical strategies planned for achieving the TLO | ● learning through Chemical reactions<br>● Illustration with examples.<br>● Experiments to study iodoform reaction<br>● Name reactions<br>● Group task and peer learning |
| Interdisciplinary linkages and infusion of life skills, values etc | ● Misuse of alcohol for drinking purpose and how it effects the central nervous system<br>● Exhibits values of honesty, objectivity & rational thinking<br>● Aspirin is used as analgesic, to be avoided |
| Resources including ICT | OLAB activities |
| Inclusive practices | ● HOTS questions<br>● MLL<br>● Allow students to record classroom presentation or text in audio format.<br>● Encourage group task & peer assistance for experiment work.<br>● Highlight and underline the key concept. |

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

| **LESSON PLAN-III** | |
|---|---|
| Class | XII |
| Subject | CHEMISTRY |
| Topic | **Ethers (III)** |
| Gist of the Lesson/Concept | • Introduction to ethers.<br>• Preparation of ethers.<br>• Physical and chemical properties of ethers.<br>• Uses of ethers.<br>• Structure activity relationship of ethers. |
| Focussed skills/competencies | • Objectivity<br>• Critical Thinking.<br>• Scientific knowledge to reason.<br>• Experimentation |
| Targeted learning outcomes (TLO) | The learner will able to<br><br>• Know the structure of compound from normal/IUPAC name.<br>• Learn about the chemical reactivity of ethers including cleavage reactions.<br>• Explore the practical applications of ethers, such as their use as solvents, anesthetics.<br>• Understand the potential hazards associated with ethers, including their flammability and toxicity. |
| Pedagogical strategies planned for achieving the TLO | • **Conceptual Framework**: Start by establishing a clear definition and conceptual framework of ethers.<br>• **Comparative Analysis**: Compare ethers with other organic compounds, highlighting similarities and differences.<br>• Use molecular models, diagrams, and animations to illustrate the structure of ethers. |
| Interdisciplinary linkages and infusion of life skills, values etc | • **Biology**: Explore the role of ethers in biological systems, such as their use as solvents in biochemical reactions or as pharmaceutical agents.<br>• Discuss ethical considerations related to the use of ethers in industries, considering environmental sustainability and human health. |

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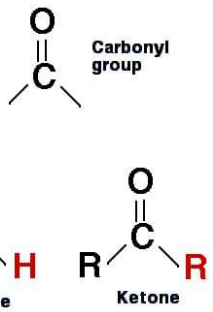
| Resources including ICT | Charts, PowerPoint, animations.<br>  <br> |
| Inclusive practices | • HOTS questions<br>• MLL questions<br>• Allow students to record classroom presentation or text in audio format.<br>• Encourage group task & peer assistance for experiment work.<br>• Highlight and underline the key concept. |
| Assessment items for measuring the attainment of LOs | • Multiple choice questions with one correct answer.<br>• Multiple choice questions with two correct answers.<br>• Statement based questions<br>• Assertion & reasoning based questions<br>• Google forms<br>• Case based questions<br>• Oral questions |

# CH-8: ALDEHYDES, KETONE AND CARBOXYLIC ACID

| LESSON PLAN-I | |
|---|---|
| Class | XII |
| Subject | CHEMISTRY |
| Topic | **ALDEHYDES AND KETONES (Part -I)** |
| Gist of the Lesson/Concept | • Nomenclature and structure of carbonyl group<br>• Preparation of aldehydes and ketones<br>• Physical and chemical properties<br>• Nucleophilic addition reactions<br>• Reactions due to alpha hydrogen<br>• Uses of aldehydes and ketones |
| Focussed skills/competencies | • Understanding<br>• Critical Thinking<br>• Scientific knowledge to reason<br>• Experimentation |
| Targeted learning outcomes (TLO) | The learner will able to<br>• Name different aldehydes and ketones.<br>• Learn methods of preparation.<br>• Understand the reactivity of different carbonyl compounds towards nucleophilic reaction.<br>• Compare physical and chemical properties of aldehydes and ketones.<br>• Make flow charts of name reactions.<br>• Give uses of aldehydes and ketones. |
| Pedagogical strategies planned for achieving the TLO | • Using models to explain structure of molecules.<br>• Performing tests and reactions in lab to understand the properties of aldehydes and ketones.<br>• Comparing properties of aldehydes and ketones<br>• Enhancing learning by interconversion charts<br>• Encourage students to practice reactions by providing worksheets.<br>• Group task & peer learning. |
| Interdisciplinary linkages and infusion of life skills, values etc | • Aldehydes and ketones play important role in biochemical processes of life, add fragrance and flavour to nature, used to preserve biological specimens.<br>• Exhibits values of honesty, objectivity & rational thinking |
| Resources including ICT | Models, Charts, Power point presentations, animations<br>  |

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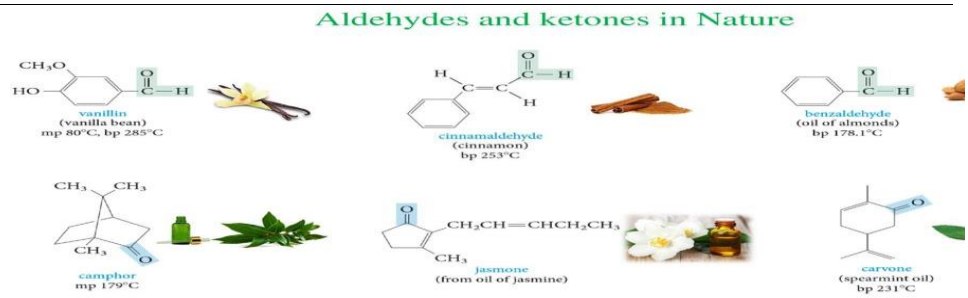
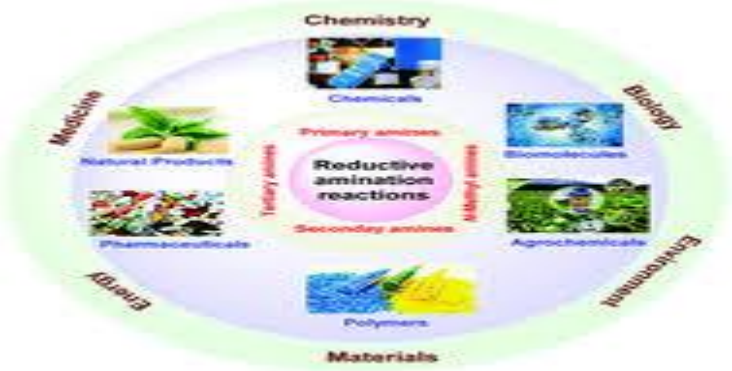
| |  |
| Inclusive practices | • HOTS questions<br>• MLL questions<br>• Use models to explain structures of molecules.<br>• Allow students to record classroom presentation or text in audio format.<br>• Encourage group task & peer assistance for experiment work.<br>• Highlight and underline the key concept.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

| **LESSON PLAN-II** | |
|---|---|
| Class | XII |
| Subject | CHEMISTRY |
| Topic | **CARBOXYLIC ACID (Part - II)** |
| Gist of the Lesson/Concept | • Different carboxylic acids<br>• Physical properties of carboxylic acid<br>• Chemical properties of carboxylic acid<br>• Uses of carboxylic acid in our daily life |
| Focussed skills/competencies | • Objectivity<br>• Critical Thinking with Data Interpretations to find strength of carboxylic acid<br>• Scientific knowledge to reason<br>• Experimentation<br>• Writing chemical equations |
| Targeted learning outcomes (TLO) | The learner will able to<br>• Plans and conducts investigations and experiments to identify the functional group present in an organic compound<br>• Draw structures of carboxylic acids to show dimer formation, resonance stabilization of carboxylate ion , effect of substituents on the acidic strength of carboxylic acids.<br>• Use scientific convention, symbols, chemical formulae, chemical equations as per international standard<br>• Apply scientific concepts in daily life like carboxylic acids in |

| | |
|---|---|
| | textile industries , food industries and perfumeries<br>• Realises and appreciates the interface of chemistry with other disciplines . |
| Pedagogical strategies planned for achieving the TLO | • Analyses and interprets data of pH values to find out the acidic strength.<br>• Write chemical formulae of lower acids using pen paper, ICT simulation , or game of cards.<br>• Experiments to explain uses of acids in our daily life |
| Interdisciplinary linkages and infusion of life skills, values etc | • Applications of carboxylic acids in our everyday life such as in soap industries , food industries<br>• Exhibits values of honesty during practicals objectivity & rational thinking |
| Resources including ICT | Charts ,PPT , animations<br>  |
| Inclusive practices | • HOTS questions<br>• MLL questions<br>• Use embossed diagrams for explaining pictures & graphs.<br>• Allow students to record classroom presentation or text in audio format.<br>• Encourage group task & peer assistance for experiment work.<br>• Highlight and underline the key concept. |
| Assessment items for measuring the attainment of LOs | • Multiple choice questions with one correct answer.<br>• Multiple choice questions with two correct answers.<br>• Statement based questions<br>• Assertion & reasoning based questions<br>• Google forms<br>• Case based questions<br>• Graph based questions<br>• Oral testing.<br>• Open book test. |

# CH-9: AMINES

| LESSON PLAN-I | |
|---|---|
| Class | XII |
| Subject | CHEMISTRY |
| Topic | **Amines (Part - I)** |
| Gist of the Lesson/Concept | • basicity of Amines<br>• Chemical reactions involving alkylamines and aryl amines<br>• Method of preparation of Diazonium salts<br>• Chemical reactions involving Diazonium salts |
| Focussed skills/competencies | • Objectivity<br>• Critical Thinking with Data<br>• Scientific knowledge to reason<br>• Experimentation |
| Targeted learning outcomes (TLO) | The learner will able to<br>• Analyse and Interprets data of basicity of amines<br>• describe chemical reactions including aliphatic amines and aromatic amines<br>• Distinguish between primary, secondary and tertiary amines based on Hinsberg`s reagent<br>• Describe method of preparation of diazonium salts and their chemical reactionsreactions ( coupling reactions) |
| Pedagogical strategies planned for achieving the TLO | • Gather data for $p_H$ for comparing basicity of amines<br>• Experiments to distinguish primary, secondary and tertiary amines.<br>• Group task & peer learning of name reactions using flash cards |
| Interdisciplinary linkages and infusion of life skills, values etc | • Application in synthesis of medicines like Novocain, Benadryl, fibres, dyes. Occurrence in proteins, vitamins, alkaloids and hormones<br>• Exhibits values of honesty, objectivity & rational thinking |
| Resources including ICT | Charts ,Powerpoint ,animations<br>  |
| Inclusive practices | • HOTS questions<br>• MLL questions<br>• Use flow charts for explaining chemical reactions |

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| | • Allow students to record classroom presentation or text in audio format.<br>• Encourage group task like flash cards of important reactions & peer assistance for experiment work.<br>• Highlight and underline the key concept. |
| Assessment items for measuring the attainment of LOs | • Multiple choice questions with one correct answer.<br>• Multiple choice questions with two correct answers.<br>• Statement based questions<br>• Assertion & reasoning based questions<br>• Google forms<br>• Case based questions<br>• Oral testing.<br>• Open book test. |

| **LESSON PLAN-II** | |
|---|---|
| Class | XII |
| Subject | CHEMISTRY |
| Topic | **Amines (Part - II)** |
| Gist of the Lesson/Concept | • basicity of Amines<br>• Chemical reactions involving alkylamines and aryl amines<br>• Method of preparation of Diazonium salts<br>• Chemical reactions involving Diazonium salts |
| Focussed skills/competencies | • Objectivity<br>• Critical Thinking with Data<br>• Scientific knowledge to reason<br>• Experimentation |
| Targeted learning outcomes (TLO) | The learner will able to<br>• Analyse and Interprets data of basicity of amines<br>• describe chemical reactions including aliphatic amines and aromatic amines<br>• Distinguish between primary, secondary and tertiary amines based on Hinsberg`s reagent<br>• Describe method of preparation of diazonium salts and their chemical reactionsreactions ( coupling reactions) |
| Pedagogical strategies planned for achieving the TLO | • Gather data for $p_H$ for comparing basicity of amines<br>• Experiments to distinguish primary, secondary and tertiary amines.<br>• Group task & peer learning of name reactions using flash cards |
| Interdisciplinary linkages and infusion of life skills, values etc | • Application in synthesis of medicines like Novocain, Benadryl, fibres, dyes. Occurrence in proteins, vitamins, alkaloids and hormones<br>• Exhibits values of honesty, objectivity & rational thinking |

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| Resources including ICT | Charts ,Powerpoint ,animations   |
| Inclusive practices | • HOTS questions<br>• MLL questions<br>• Use flow charts for explaining chemical reactions<br>• Allow students to record classroom presentation or text in audio format.<br>• Encourage group task like flash cards of important reactions & peer assistance for experiment work.<br>• Highlight and underline the key concept. |
| Assessment items for measuring the attainment of LOs | • Multiple choice questions with one correct answer.<br>• Multiple choice questions with two correct answers.<br>• Statement based questions<br>• Assertion & reasoning based questions<br>• Google forms<br>• Case based questions<br>• Oral testing.<br>• Open book test. |

# CH-10: BIOMOLECULES

| LESSON PLAN-I | |
|---|---|
| Class | XII |
| Subject | CHEMISTRY |
| Topic | **BIOMOLECULES (PART - I)** |
| Gist of the Lesson/Concept | ● Classification of carbohydrates, monosaccharides and polysaccharides<br>● Glucose- preparation and structure of glucose.<br>● Fructose – preparation and structure of fructose,<br>● Polysaccharides- structure of starch and cellulose<br>● Importance of carbohydrates |
| Focussed skills/competencies | ● Objectivity<br>● Scientific knowledge to reason<br>● Experimentation |
| Targeted learning outcomes (TLO) | The learner will be able to<br>● understand and Learn<br>the elements present in biomolecules and the difference between monomers and polymers.<br>● Explain the role of<br>water in synthesis and breakdown of polymers.<br><br>List the four major complex biomolecules found in living cells, and the basis for grouping of biomolecules into those four groups.<br>● For each group of<br>biomolecules learn the name of its generic monomer (simple unit) and polymer (complex structure) and their function.<br>● Carbohydrates: Identify their<br>chemical elements and the difference between simple sugars and complex carbohydrates.<br>● Compare and contrast the structure and<br>function of the carbohydrates and where they are found. |
| Pedagogical strategies planned for achieving the TLO | ● Analyses and interprets the general terms used for monosaccharides.<br>● Making correct structure of monomer units of polysaccharides .<br>● Explaining the structure of molecule using models<br>● Performing tests and reactions in lab to understand the properties of different biomolecules.<br>● Teaching by inter conversion chart.<br>Make the student practice reactions .<br>● Teaching by comparison the chemical and<br>physical properties of different biomolecules.<br><br>● Group task & peer learning. |
| Interdisciplinary linkages and infusion of life skills, values etc | ● Biomolecules are related to biology.<br>● Biomolecules interact with each other and constitute the molecular logic of life processes.<br>● Glucose , sucrose and starch used in homes as food and other tasks. |

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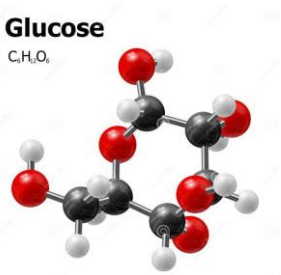
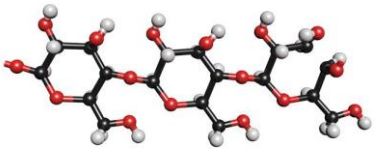
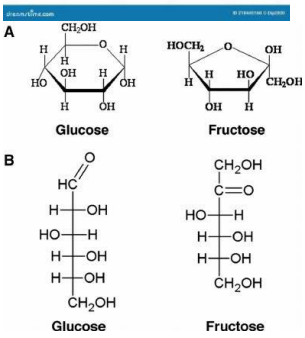
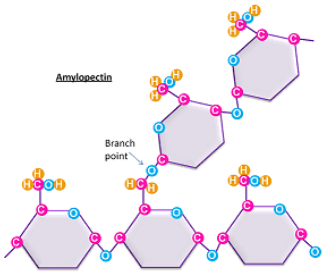
| Resources including ICT | Charts, PowerPoint, animations<br>  <br>  <br>  <br>  |
| Inclusive practices | • HOTS questions<br>• MLL questions<br>• Use embossed diagrams for explaining picture.<br>• Allow students to record classroom presentation or text in audio format.<br>• Encourage group task &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

| LESSON PLAN-II | |
|---|---|
| Class | XII |
| Subject | CHEMISTRY |
| Unit | **Biomolecules (Part - II)** |
| Gist of the Lesson/Concept | ● Classification of amino acids<br>● Structure of protein<br>● Types of protein<br>● Denaturation of protein<br>● Mechanism of enzyme action<br>● Importance of vitamins<br>● Chemical composition of nucleic acid |
| Focussed skills/competencies | ● Objectivity<br>● Critical Thinking with reasoning<br>● Scientific knowledge to reason<br>● Experimentation |
| Targeted learning outcomes (TLO) | The learner will able to<br>● Realize and appreciate the interface of chemistry with Biology .<br>● Understand the role of bio molecules.<br>● Explain structure of proteins and nucleic acids;<br>● Exhibit creativity in designing model of DNA using eco- friendly resources.<br>● Differentiate between DNA and RNA based on properties. |
| Pedagogical strategies planned for achieving the TLO | ● Write formulae of amino acid, chemical equations, nomenclature etc, using paper and pen.<br>● Interactive ICT simulations or games of cards.<br>● Collect information on deficiency diseases and its symptoms.<br>● Experiments to distinguish amino acid.<br>● Group task & peer learning. |
| Interdisciplinary linkages and infusion of life skills, values etc | ● Applications of biomolecules in our everyday life such as food, medicines etc.<br>● Exhibits values of honesty, objectivity & rational thinking |
| Resources including ICT | Charts, Powerpoint, animationsanimations<br>https://youtu.be/9bWjuwTiYXI?si=Ly6jw0JxxSFoF866 |
| Inclusive practices | ● HOTS questions<br>● MLL questions<br>● Encourage group task & peer assistance for experiment work.<br>● Highlight and underline the key concept. |
| Assessment items for measuring the attainment of LOs | ● Multiple choice questions.<br>● Statement based questions<br>● Assertion & reasoning based questions<br>● Google forms<br>● Case based questions<br>● Oral testing. |