**Lesson Plan**

**Name of Assistant/Associate Professor: SEEMA KASHYAP**

**Class and section: B.Sc II N.M & Med. Sem 4th ( PHYSICAL CHEMISTRY )**

**Chemistry Lesson Plan: Week (From FEB 2024 to May 2024)**

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| **Chapter 1: Thermodynamics II** | **Dates** |
| * 1.1 Introduction –Need for second Law of thermodynamics and Statement | Feb , Week Ist |
| * 1.2 Carnot Cycle And its efficiency * 1.3 Carnot Theorem | Feb , Week 2nd |
| * 1.4 Thermodynamics scale of temperature * 1.5 Entropy | Feb , Week 3rd |
| * 1.6 Entropy Change in Reversible Processes * 1.7 Entropy Change in irreversible Processes | Feb , Week 4th |
| * 1.8 Clausius inequality * 1.9 Entropy change of universe | March, Week Ist |
| * 1.10 Entropy change for ideal gas with change in P,V & T * Entropy Change during Physical changes | March, Week Ist |
| * 1.11 Entropy Change on mixing of ideal gas * 1.12 Physical Significance of Entropy * 1.13 Measure of Disorder | March , Week 2nd |
| **Chapter 2:Electrchemistry** |  |
| * 2.1 What is Electrochemical cell or Galvanic cell * 2.2 What is Electrolytic Cell | March , Week 2nd |
| * 2.3 Representation of Electrochemical Cell * 2.4 Electrode Potential | March, Week 3rd |
| * 2.5 EMF of the Cell And its Measurement * 2.6 Standard cell | March, Week 3rd |
| * 2.7 Reversible and Irreversible Cell * 2.8 Reversible electrodes | Marchl, Week 4th |
| * 2.9 Relationship between Chemical and Electrical Energy * 2.10 Calculation of Thermodynamics Quantity of the Cell reaction | April,Week Ist |
| * 2.11 Standard Hydrogen Electrode and Measurement of Electrode Potential * 2.12 Other Reference Electrode and Measurement of Electrode Potential | April,Week Ist |
| * Assignment-I | April,Week 2nd |
| * 2.13 Electrochemical Series * 2.14 Application of Electrochemical Series | April, Week 2nd |
| * 2.15 Activity and Activity coefficient of the electrolyte * 2.16 Standard State | April, Week 3rd |
| * 2.17 Nernst Equation for EMF of Cell * 2.18 Nernst Equation for Electrode Potential | April, Week 3rd |
| * 2.19 Calculation of Equilibrium Constant of Cell reaction * 2.20 Polarization | April, Week 3rd |
| * 2.21 Decomposition Voltage/Potential Deposition * 2.22 Discharge of Potential | April, Week 4th |
| * 2.23 Overvoltage or Over Potential * 2.24 Hydrogen Overvoltage | April Week 4th |
| * 2.25 Anodic Overvoltage and Oxygen Overvoltage * 2.26 Application of Overvoltage | May, Week Ist |
| * Test | May, Week Ist |
| * 2.27 Concentration Cell * 2.28 Types of Concentration Cell | May, Week Ist |
| * Assignment-II | May , Week 2nd |
| * 2.29 EMF of Concentration Cell | May , Week 2nd |
| * 2.30 Review of Various Types of Electrochemical Cells | May, Week 2nd |
| * 2.31 Liquid Junction Potential | May, Week 3rd |
| * 2.32 Determination of Activities and Activity Coefficient from EMF Measurements * 2.33 Application of EMF Measurement | May, Week 3rd |

**LESSON PLAN**

**Name of Assistant/Associate Professor: SEEMA KASHYAP**

**Class and section: B.Sc II Med. & Non med. Sem 4th (INORGANIC CHEMISRY)**

**Chemistry Lesson Plan: 15 Week (From FEB 2024 to May 2024)**

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| **Chapter 1: Chemistry of Lanthanides** | **Dates** |
| • 1.1 Introduction  • 1.2 Electronic structure  • 1.3 Physical properties of lanthanides | Feb , Week Ist |
| • 1.4 oxidation states  • 1.5 magnetic properties | Feb , Week 2nd |
| • 1.6 ionic radii and lanthanide contraction  • 1.7 complex formation | Feb , Week 3rd |
| • 1.8 occurrence and isolation  • 1.9 lanthanide compounds | Feb , Week 4th |
| **Chapter 2: Chemistry of Actinides** | March, Week Ist |
| • 2.1 General features and chemistry of actinides  • 2.2 chemistry of separation of Np, Pu and Am from U | March, Week Ist |
| • 2.3 Comparison of properties of lanthanides and actinides and with transition elements | March , Week 2nd |
| • problems from chapter 1 & 2 |  |
| • test of chapter 2 | March , Week 2nd |
| **Chapter 3: Theory of qualitative and quantative inorganic analysis-1** |  |
| * 3.1 Introduction * 3.2 Basic Principles of Inorganic qualitative analysis | March, Week 3rd |
| * 3.3 Chemistry of analysis of various acidic radicals * 3.4 chemistry of identification of acidic radicals in typical combinations | March, Week 3rd |
| * 3.5 chemistry of interference of acid radicals including their removal in the analysis of basic radicals | Marchl, Week 4th |
| * problems of chapter 3 | April,Week Ist |

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| **Chapter 4: Theory of quanlitative and quantative inorganic analysis - II** |  |
| * 3.1 systematic analysis of basic radicals * 3.2 chemistry of various reaction | April,Week Ist |
| * 3.3 identification of cations of group1 * 3.4identificationof cations of group II A and separation of group II B | April,Week 2nd |
| * Assignment I | April, Week 2nd |
| * Test | April, Week 3rd |
| * 3.5 identification and separation of group III | April, Week 3rd |
| * 3.6 identification and separation of group IV | April, Week 4th |
| * 3.7 Schematic flow chart of group V cations * 3.8 test of Ni2+ in the presence of Co2+ |  |
| * 3.9 gravimetry of gravemetric analysis | April Week 4th |
| * 3.10 theory of precipitation * 3.11 factors affecting solubility of precipitates | May, Week Ist |
| * 3.12 particle size of the precipitates | May, Week Ist |
| * 3.13 formation of precipitates * 3.14 desirable properties and contamination of precipitates | May , Week 2nd |
| * 3.15 treatment of the precipitates * 3.16 fractional precipitation | May, Week 2nd |
| * Problems from Chapter 3 | May, Week 2nd |
| Test |  |
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**LESSON PLAN**

**Name of Assistant/Associate Professor: SEEMA KASHYAP**

**Class and section: B.Sc II Med. & Non med. Sem 4th (ORGANIC CHEMISRY)**

**Chemistry Lesson Plan: Week (From Feb 2024 to May 2024)**

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| **Chapter 1: Infrared Absorption Spectroscopy** | **Dates** |
| * 1.1 Molecular Vibration * 1.2 Hooke’s Law * 1.3 Selection Rule | Feb , Week Ist |
| * 1.4 Intensity and Position of IR Bands * 1.5 Measurement of IR Spectrum | Feb , Week 2nd |
| * 1.6 Fingerprint Reason * 1.7 Characteristics Absorption of Various Functional Groups | Feb , Week 3rd |
| * 1.8 Interpretation of IR Spectra * 1.9 Application of IR Spectroscopy | Feb , Week 4th |
| **Chapter 2: Amines** | March, Week Ist |
| * 2.1 Structure of Amines * 2.2 Nomenclature of Amines | March, Week Ist |
| * 2.3 Separation of Primary, Secondary and Tertiary Amines * 2.4 Physical Properties | March , Week 2nd |
| * 2.5 Basic Character * 2.6 Factor effecting the Basic Character | March , Week 2nd |
| * 2.7 Preparation of Alkyl Amine * 2.8 Preparation of Aryl Amine | March, Week 3rd |
| * 2.9 Gabriel Phthalimide Reaction * 2.10 Hofmann Bromamide Reaction | March, Week 3rd |
| * 2.11 Electrophilic Substitution of Aryl Amine * 2.12 Reaction of Amine with Nitrous Acid | Marchl Week 4th |
| * Problems from Chapter 1 and 2 | March, Week 4th |
| * Test of Chapter 1 (Infrared Absorption Spectroscopy) | April,Week Ist |
| **Chapter 3: Diazonium Salts** |  |
| * 3.1 Mechanism of Diazotization * 3.2 Structure of Benzene Diazonium Chloride | April,Week Ist |
| * 3.3 Various Reaction of Diazonium Salts * 3.4 Reduction of Diazonium Salts to Hydrazine | April,Week 2nd |
| * 3.5 Coupling Reactions * 3.6 Synthesis Application of Diazonium Salts | April, Week 2nd |
| **Chapter 4: Nitro Compounds** | April, Week 3rd |
| * 4.1 Preparation of Nitro Alkane * 4.2 Preparation of Nitro Arenes | April, Week 3rd |
| * 4.3 Chemical Reactions * 4.4 Mechanism of Electrophilic Substitution Reactions | April, Week 3rd |
| * 4.5 Reduction in Acidic Neutral and Alkaline Medium * 4.6 Problem of Nitro Compounds | April, Week 4th |
| **Chapter 5: Aldehyde and Ketone** |  |
| * 5.1 Nomenclature of Carbonyl Group * 5.2 Structure of Carbonyl Group | April Week 4th |
| * 5.3 Synthesis of Aldehyde and Ketone * 5.4 Synthesis of Aldehyde from Acid Chloride | April Week 4th |
| * 5.5 Advantage of Control Oxidation of Alcohol * 5.6 Physical Property * 5.7 Comparison of Reactivity of Aldehyde and Ketone | April Week 4th |
| * 5.8 Mechanism of Nucleophilic Addition of Carbonyl Group * 5.9 Mechanism of Aldol Reaction * 5.10 Mechanism of Perkin Reaction * 5.11 Mechanism of Knoevenagel Reaction | May, Week Ist |
| * 5.12 Condensation with Ammonia and its Derivatives * 5.13 Waiting Reaction * 5.14 Mannich Reaction | May, Week Ist |
| * 5.15 Oxidation of Aldehyde * 5.16 Baeyer Villiger Oxidation * 5.17 Cannizzaro Reaction | May , Week 2nd |
| * 5.18 Clemmensen Reduction * 5.19 Wolf kishner Reduction * 5.20 LiAlH4 and NaBH4 Reduction | May, Week 2nd |
| * Problem of Aldehyde & ketone |  |
| * Revision and Practical |  |