**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 2023 to May 2023)**

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| **Chapter 1: Thermodynamics II** | **Dates** |
| * 1.1 Introduction –Need for second Law of thermodynamics and Statement
 | Feb , Week 3rd  |
| * 1.2 Carnot Cycle And its efficiency
* 1.3 Carnot Theorem
 | Feb , Week 3rd |
| * 1.4 Thermodynamics scale of temperature
* 1.5 Entropy
 |  Feb , Week 4th |
| * 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 4th |
| * 2.21 Decomposition Voltage/Potential Deposition
* 2.22 Discharge of Potential
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| * 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 2nd |
| * Assignment-II
 |  May, Week 2nd |
| * 2.29 EMF of Concentration Cell
 |  May, Week 3rd |
| * 2.30 Review of Various Types of Electrochemical Cells
 | May , Week 3rd |
| * 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 2023 to May 2023)**

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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 3rd  |
|  • 1.4 oxidation states  • 1.5 magnetic properties | Feb , Week 3rd |
|  • 1.6 ionic radii and lanthanide contraction • 1.7 complex formation |  Feb , Week 4th |
|  • 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 3rd |
|  Test | May , Week 3rd |
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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 2023 to May 2023)**

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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 3rd  |
| * 1.4 Intensity and Position of IR Bands
* 1.5 Measurement of IR Spectrum
 | Feb , Week 3rd |
| * 1.6 Fingerprint Reason
* 1.7 Characteristics Absorption of Various Functional Groups
 |  Feb , Week 4th |
| * 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
 | Marchl, 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
 |  |
| * 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
 | May, Week Ist |
| * 5.5 Advantage of Control Oxidation of Alcohol
* 5.6 Physical Property
* 5.7 Comparison of Reactivity of Aldehyde and Ketone
 | May, Week Ist |
| * 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 2nd |
| * 5.12 Condensation with Ammonia and its Derivatives
* 5.13 Waiting Reaction
* 5.14 Mannich Reaction
 |  May, Week 2nd |
| * 5.15 Oxidation of Aldehyde
* 5.16 Baeyer Villiger Oxidation
* 5.17 Cannizzaro Reaction
 |  May, Week 3rd |
| * 5.18 Clemmensen Reduction
* 5.19 Wolf kishner Reduction
* 5.20 LiAlH4 and NaBH4 Reduction
 | May , Week 3rd |
| * Problem of Aldehyde & ketone
 | May , Week 3rd |
| * Revision and Practical
 | May , Week 3rd |