***Lesson Plan-1***

**Name of the Faculty: Dr. Seema**

**Discipline: B.SC- III**

**Semester: Vth**

**Subject: Physical Chemistry**

**Lesson Plan duration: July 2024- to Nov. 2024**

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| **Month** | **Week of the Month** | **Name of the Topics** |
| **July** | **Last week** | Introduction |
| **August** | **Ist Week** | Introduction to Electromagnetic radiation, regions of spectrum, basic features of spectroscopy, statement of Born oppenheimer approximation, |
| **2nd Week** | Degrees of freedom. Diatomic molecules. |
| **3rd Week** | Energy levels of rigid rotator (semi-classical principles), Selection rules, |
| **4th Week** | spectral intensity distribution using population distribution (Maxwell- Boltzmann distribution), determination of bond length, |
| **5th Week** | qualitative description of non-rigid rotor, isotope effect |
| **September** | **Ist Week** | Infrared spectrum: Energy levels of simple harmonic oscillator, selection rules, |
| **2nd Week** | pure vibrational spectrum, intensity, |
| **3rd Week** | determination of force constant and qualitative relation of force constant, Isotopic effect on the spectra |
| **4th Week** | Idea of vibrational frequencies of different functional groups. Concept of polarizibility |
| **October** | **Ist Week** | Pure rotational and pure vibrational Raman spectra of diatomic molecules, selection rules, Quantum theory of Raman spectra |
| **2nd Week** | Black-body radiation, Plank’s radiation law, photoelectric effect, Compton effect, wave function and its significance of Postulates of quantum mechanics. Quantum mechanical operator, commutation relations, |
| **October** | **3rd Week** | Hamiltonial Operator, Hermitian operator, average value of square of Hermitian as a positive quantity |
| **4th Week** | Role of operators in quantum mechanics, To show quantum mechanically that position and momentum cannot be predicated simultaneously, Determination of wave function & energy of a particle in one  dimensional box, Pictorial representation and its significance  Introduction to Optical activity, polarization – (clausius – Mossotti equation). Orientation of dipoles in an electric field, dipole moment, included dipole moment |
| **5th Week** | Diwali Break |
| **November** | **Ist Week** | Measurement of dipole moment-temperature method and refractivity method, dipole moment and structure of molecules, Magnetic permeability, magnetic susceptibility and its determination.,1,1,2-tribromoethane., ethanol, Acetaldehyde, ethyl acetate, toluene, |
|  | **2nd Week** | Application of magnetic susceptibility, magnetic properties – paramagnetism, diamagnetism and ferromagnetic |
|  | **3rd Week** | Revision and tests |
|  | **4th Week** | Examination |

***Lesson Plan-1***

**Name of the Faculty: Dr. Seema**

**Discipline: B.SC- I**

**Semester: Ist**

**Subject: Major Chemistry**

**Lesson Plan duration: July 2024- to Nov. 2024**

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| **Month** | **Week of the Month** | **Name of the Topics** |
| **July** | **Last week** | Introduction |
| **August** | **Ist Week** | **Gaseous state Introduction –**  Kinetic molecular theory of gases explanation, Maxwell distribution of velocities detailed description, |
| **2nd week** | Maxwell distribution of energies with explanation, Calculation of r.m.s and average velocity, |
| **3rd Week** | Calculation of most probable velocity, Collision diameter, collision frequency discussion, Collision number, Mean free path Deviation of real gases from ideal behaviour |
| **4th Week** | Derivation of Vanderwaal equation of state, Application of Vander-waal equation in Calculation of Boyle temperature, |
| **5th Week** | Compressibility factor, Derivation of Vanderwaal equation of state, Application of Vander-waal equation in Calculation of Boyle temperature, Compressibility factor, |
| **September** | **Ist Week** | **Critical phenomenon** -Introduction, Critical temperature, Critical pressure and its determination, Critical volume and it's determination |
| **2nd Week** | PV isotherm of real gases, Continuity of states, Vanderwall equation and critical constant, Law of corresponding state |
| **3rd Week** | Problems of Gaseous state, Numerical problems of Gaseous state, |
| **4th Week** | Relationship between critical constant Numerical problems of critical constant |
| **October** | **Ist Week** | Discussion of critical phenomenon, Oral test of critical phenomenon |
| **2nd Week** | **Solid state-**  Introduction, Classification of solids, |
| **October** | **3rd Week** | law of constancy of interfacial angles, Law of rotational indices, Miller indices |
| **4th Week** | Elementary ideas of symmetry and symmetry elements |
| **5th Week** | Diwali break |
| **November** | **Ist Week** | Seven crystal systems and fourteen bravious lattices  X\_ray diffraction and Bragg law |
|  | **2nd Week** | A simple account of laue method |
|  | **3rd Week** | Revision and tests |
|  | **4th Week** | Examination |

***Lesson Plan-1***

**Name of the Faculty: Dr. Seema**

**Discipline: B.SC- I**

**Semester: Ist**

**Subject: Minor Chemistry**

**Lesson Plan duration: July 2024- to Nov. 2024**

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| **Month** | **Week of the Month** | **Name of the Topics** |
| **July** | **Last week** | Introdution to Chemsitry |
| **August** | **Ist Week** | VSEPR Theory |
| **2nd Week** | Hybridisation, shapes of simple inorganic molecules |
| **3rd Week** | Linear, trigonal planar, square planar, tetrahedral , trigonal planar and octahedral arrangements |
| **4th Week** | Suitable examples of different molecules |
| **5th Week** | Reaction rates, factor affecting the reaction |
| **September** | **Ist Week** | Concept of reaction rates |
| **2nd Week** | Factors affecting rates of reaction |
| **3rd Week** | Order and molecularity of reaction |
| **4th Week** | Zero and first order reaction |
| **October** | **Ist Week** | Alkanes, nomenclature, classification of carbon atoms in alkanes |
| **2nd Week** | Isomerism in alkanes, wurtz reaction, Kolbe reaction |
| **October** | **3rd Week** | Corey house reaction, decarboxylation of carboxylic acids |
| **4th Week** | Metallic bond |
| **5th Week** | Diwali break |
| **November** | **Ist Week** | Band theory of metallic bond |
|  | **2nd Week** | revision |
|  | **3rd Week** | Revision and tests |
|  | **4th Week** | Examination |

***Lesson Plan-1***

**Name of the Faculty: Dr. Seema**

**Discipline: B.SC- II**

**Semester: 3rd**

**Subject: Major Chemistry**

**Lesson Plan duration: July 2024- to Nov. 2024**

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| **Month** | **Week of the Month** | **Name of the Topics** |
| **July** | **Last week** | Introdution to Chemsitry |
| **August** | **Ist Week** | VSEPR Theory |
| **2nd Week** | Hybridisation, shapes of simple inorganic molecules |
| **3rd Week** | Linear, trigonal planar, square planar, tetrahedral , trigonal planar and octahedral arrangements |
| **4th Week** | Molecular orbital theory of homonuclear and heteronuclear molecules |
| **5th Week** | Dipole moment and % ionic character |
| **September** | **Ist Week** | Concept of reaction rates, order and molecularity of reaction |
| **2nd Week** | Factors affecting rates of reaction |
| **3rd Week** | Order and molecularity of reaction, zero order reaction |
| **4th Week** | first order and half order reactions |
| **October** | **Ist Week** | Arrhenius equation |
| **2nd Week** | Nernst Distribution law, thermodynamic derivation |
| **October** | **3rd Week** | N D L after dissociation and association of solute in one of the phases |
| **4th Week** | Degree of hydrolysis and hydrolysis constant of aniline hydrochloride |
| **5th Week** | Diwali break |
| **November** | **Ist Week** | Revision |
|  | **2nd Week** | revision |
|  | **3rd Week** | Revision and tests |
|  | **4th Week** | Examination |

***Lesson Plan-1***

**Name of the Faculty: Dr. Seema**

**Discipline: B.SC- II**

**Semester: 3rd**

**Subject: Minor Chemistry**

**Lesson Plan duration: July 2024- to Nov. 2024**

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| **Month** | **Week of the Month** | **Name of the Topics** |
| **July** | **Last week** | Introduction to Chemistry |
| **August** | **Ist Week** | Kinetic theory of gases |
| **2nd Week** | Root mean square velocity |
| **3rd Week** | Collision number |
| **4th Week** | Mean free path |
| **5th Week** | average velocity |
| **September** | **Ist Week** | most probable velocity |
| **2nd Week** | ,collosion diameter, |
| **3rd Week** | collosion frequency |
| **4th Week** | Numerical problems |
| **October** | **Ist Week** | Numerical problems |
| **2nd Week** | Numerical problems |
| **October** | **3rd Week** | Revision and Tests |
| **4th Week** | Revision and Tests |
| **5th Week** | Diwali Bresk |
| **November** | **Ist Week** | Revision and Tests |
|  | **2nd Week** | Revision and Tests |
|  | **3rd Week** | Revision and Tests |
|  | **4th Week** | Examination |