**Sample Format (Lesson Plan)**

**MCM DAV College for Women, Sector – 36A, Chandigarh**

**Monthly Teaching Plans (Odd Semester)**

**Session – (2020-21)**

**Name of the Teacher/s Dr. Rishu**

**Department Post Graduate Department of Chemistry**

**Class: B.Sc III Subject: Inorganic Chemistry Section (s): Non MedA, B**

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| **S.No.** | **Date**  **(Monthly)** | | **Topics to be Covered** | **Academic Activity Undertaken\*** |
| **From** | **To** |
| 1 | 13-08-2020 | 31-08-2020 | **Ligand Bonding in Transition Metal Complexes**  Limitations of valence bond theory, an elementary idea of crystal – field theory, crystal field splitting in octahedral, tetrahedral and square planar complexes, factors affecting the crystal – field parameters, Spectro chemical Series. | Lecture Method |
| 2 | 01-09-2020 | 30-09-2020 | **Thermodynamic and Kinetic Aspects of Metal Complexes**  A brief outline of thermodynamic and Kinetic stability of metal complexes and factors affecting the stability, substitution reactions of square planar complexes | Lecture Method |
| 3 | 01-10-2020 | 30-10-2020 | **Organometallic Chemistry**  Definition, nomenclature and classification of organometallic compounds. Preparation, properties, bonding . | Lecture Method, assignments and Group Discussion |
| 4 | 03-11-2020 | 28-11-2020 | Applications of alkyls and aryls of Li, Al , Hg, Sn and Ti, a brief account of metal – ethylenic complexes and homogeneous hydrogenation, mononuclear carbonyls and the nature of bonding in metal carbonyls | Lecture Method and Group Discussion |
| 5 | 01-12-2020 | 24-12-2020 | **Bioinoganic Chemistry**  Essential and trace elements in biological processes, metalloporphyrins with special reference to haemoglobin and myoglobin. | Lecture Method and Group Discussion |
| 6 | 01-12-2021 | Till exams | Biological role of alkali and alkaline earth metal ions. Nitrogen fixation | Lecture Method and Group Discussion |
| **Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans** | | | | |
| 7thSeptember, 2020 | The teachers have completed the scheduled chapters and topics as shown in the lesson plan | | | |
| **Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans** | | | | |
| 5thOctober, 2020 | The teachers have completed the scheduled chapters and topics as shown in the lesson plan | | | |
| **Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans** | | | | |
| 3rd  November, 2020 | The teachers have completed the scheduled chapters and topics as shown in the lesson plan | | | |
| **Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans** | | | | |
| 7thDecember, 2020 | The teachers have completed the scheduled chapters and topics as shown in the lesson plan | | | |
| **Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans**   |  |  | | --- | --- | | 4thJanuary, 2021 | The teachers have completed the scheduled chapters and topics as shown in the lesson plan | | | | | |

**\*Any of these** – (i) Lecture Method; (ii) PPT; (iii) Online Sources; (iv) Group Discussion; (v) Case Studies etc.

Other Methods adopted by the teacher – Please write the specific teaching method

**Sample Format (Lesson Plan)**

**MCM DAV College for Women, Sector – 36A, Chandigarh**

**Monthly Teaching Plans (Even Semester)**

**Session – (2020-21)**

**Name of the Teacher/s Dr. Rishu**

**Department Post Graduate Department of Chemistry**

**Class: B.Sc III Subject: Inorganic Chemistry Section (s): Med A, Non Med B**

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| **S.No.** | **Date**  **(Monthly)** | | **Topics to be Covered** | **Academic Activity Undertaken\*** |
| **From** | **To** |
| 1 | 01-04-2021 | 30-04-2021 | **Silicones and Phosphazenes**  Silicones and phosphazenes as examples of inorganic polymers, nature of bonding in triphosphazenes. | Lecture Method |
| 2 | 01-05-2021 | 31-05-2021 | **Hard and Soft Acids and Bases**  Classification of acids and bases as hard and soft Pearson’s HSAB concept, acid-base strength and hardness and softness. Symbiosis, theoretical basis of hardness and softness, electronegativity and hardness and softness | Lecture Method |
| 3 | 01-06-2021 | 30-06-2021 | **Electronic Spectra of Transition Metal Complexes**  Types of electronic transitions, L – S coupling, selection rules for d-d transitions, spectroscopic ground states, Orgel – energy level diagram for d1 and d9states, discussion of the electronic spectrum of [Ti(H2O)6]3+ complex ion | Lecture Method and Group Discussion |
| 4 | 01-07-2021 | Till exams | **Magnetic Properties of Transition Metal Complexes**  Types of magnetic behaviour, methods of determining magnetic susceptibility, spin-only formula. Correlation of µs and µeff values, orbital contribution to magnetic moments, application of magnetic moment data for 3d metal complexes | Lecture Method |
| **Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans** | | | | |
| 5th April , 2021 | The teachers have completed the scheduled chapters and topics as shown in the lesson plan | | | |
| **Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans** | | | | |
| 3rd May, 2021 | The teachers have completed the scheduled chapters and topics as shown in the lesson plan | | | |
| **Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans** | | | | |
| 7th June, 2021 | The teachers have completed the scheduled chapters and topics as shown in the lesson plan | | | |
| **Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans** | | | | |
| 5th July  , 2021 | The teachers have completed the scheduled chapters and topics as shown in the lesson  plan | | | |

**\*Any of these** – (i) Lecture Method; (ii) PPT; (iii) Online Sources; (iv) Group Discussion; (v) Case Studies etc.

Other Methods adopted by the teacher – Please write the specific teaching method

**Lesson Plan**

**Mehr Chand Mahajan D.A.V. College for Women, Sector – 36A, Chandigarh**

**Monthly Teaching Plans (Odd Semester)**

**Session –2020-2021**

**Name of Teachers: Dr. Shefali Dhiman**

**Department: Chemistry**

**Class: B. Sc. IIIrd year (5th Semester) Subject: Organic Chemistry (CH-XVIII)**

**Lesson Plan: Unit 1, 2, 3 and 4.**

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| **S. No.** | **Date**  **(Monthly)** | | **Topics to be Covered** | **Academic Activity Undertaken\*** |
| **From** | **To** |
| 1. | 13-08-2020 | 31-08-2020 | **Unit 1**: **Electromagnetic spectra: Absorption spectra**  **UV Absorption spectroscopy:**  Beer Lambert Law, molar absorptivity, presentation and analysis of UV spectra. | **Lecture** |
| 2. | 01-09-2020 | 30-09-2020 | **Unit 1**: **UV Absorption spectroscopy:** types of electronic transitions, Effects of conjugation, chromophore, auxochromes, bathochromic, hypsochromic, hyperchromic shifts, UV spectra of conjugated enes and enones, Woodward fisher rules and application to conjugated alkenes and carbonyl compounds  **Unit 2**: **Electromagnetic spectra: Absorption spectra**  **IR Absorption spectroscopy:** Molecular vibrations, Hooke’s law, selection rules, intensity and positions of IR bands, | **Lecture, group discussion** |
| 3. | 01-10-2020 | 30-10-2020 | **Unit 2**: **IR Absorption spectroscopy:** measurement of IR spectrum, finger print region, IR absorption of various functional groups, and interpretation of IR spectra of simple organic compounds.  **Unit 3: Spectroscopy**  **Nuclear Magnetic resonance spectroscopy (NMR):** 1H NMR, nuclear shielding and deshielding, chemical shift, spin-spin coupling, coupling constants. | **Lecture, group discussion** |
| 4. | 03-11-2020 | 28-11-2020 | **Unit 3: Spectroscopy**  **Nuclear Magnetic resonance spectroscopy (NMR):** area of signals, interpretation of NMR spectra of simple organic molecules.  . | **Lecture, group discussion** |
| 5. | 01-12-2020 | 24-12-2020 | **Unit 4: Carbohydrates**  Classification and structure, monosaccharides, osazone formation, interconversion of glucose to fructose, chain lengthening and chain shortening of aldoses, configurations of monosaccharides, erythro and threo diastereomers | **Lecture, online resources** |
| 7 | 01-01-2021 | Till exams | **Unit 4: Carbohydrates**  Conversion of glucose to mannose, formation of glucosides, ethers and esters, determination of ring size of monosaccharides, cyclic structure of D-glucose, mechanism of mutarotation.  Structure of ribose and deoxyribose.  Introduction to disaccharides (maltose, sucrose, lactose)  And polysaccharides (starch and cellulose) | **Lecture, online resources** |
| **Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans** | | | | |
| 7th September, 2020 | The teachers have completed the scheduled chapters and topics as shown in the lesson plan | | | |
| **Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans** | | | | |
| 5th October, 2020 | The teachers have completed the scheduled chapters and topics as shown in the lesson plan | | | |
| **Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans** | | | | |
| 3rd November, 2020 | The teachers have completed the scheduled chapters and topics as shown in the lesson plan | | | |
| **Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans** | | | | |
| 7th December, 2020 | The teachers have completed the scheduled chapters and topics as shown in the lesson plan | | | |
| **Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans**   |  |  | | --- | --- | | 4th January, 2021 | The teachers have completed the scheduled chapters and topics as shown in the lesson plan | | | | | |

**\*Any of these** – (i) Lecture Method; (ii) PPT; (iii) Online Sources; (iv) Group Discussion; (v) Case Studies etc.

Other Methods adopted by the teacher – Please write the specific teaching method

**Lesson Plan**

**Mehr Chand Mahajan D.A.V. College for Women, Sector – 36A, Chandigarh**

**Monthly Teaching Plans (Even Semester)**

**Session –2020-2021**

**Name of Teachers: Dr. Shefali Dhiman**

**Department: Chemistry**

**Class: B. Sc. IIIrd year (6th Semester) Subject: Organic Chemistry (CH-XXII)**

**Lesson Plan: Unit 1, 2, 3 and 4.**

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| **S. No.** | **Date**  **(Monthly)** | | **Topics to be Covered** | **Academic Activity Undertaken\*** |
| **From** | **To** |
| 1. | 01-04-2021 | 30-04-2021 | **Unit 1**: **Amino acids, Peptides, Proteins and Nucleic acids**  Classification, structure, stereochemistry of amino acids, acid-base behavior, isoelectric point, electrophoresis, preparation and reactions of amino acids. Structure and nomenclature, classification of peptides, proteins. Peptide structure determination, end group analysis, selective hydrolysis of peptides. | **Lecture** |
| 2. | 01-05-2021 | 31-05-2021 | **Unit 1**: Classical and solid-phase peptide synthesis, Levels of protein structure, protein denaturation/renaturation.  Introduction to nucleic acids, ribonucleosides and ribonucleotides, double helical structure of DNA.  **Unit 2: Synthetic polymers**  Addition or chain growth polymerization, free radical and ionic vinyl polymerization, Zieglar-Nata Polymerization, vinyl polymers, Condensation Polymerization, | **Lecture, group discussion** |
| 3. | 01-06-2021 | 30-06-2021 | **Unit 2:** Polyesters, polyamides, phenol formaldehyde resins, epoxy resins, urea formaldehyde resins, polyurethanes, Natural and synthetic rubbers.  **Unit 3: Organic synthesis via enolates**  Acidity of α-hydrogens, alkylation of diethyl malonate and ethyl acetoacetate.  Synthesis of ethyl acetoacetate: Claisen condensation, Keto-enol Tautomerism of ethyl acetoacetate. Alkylation and acylation of enamines. | **Lecture, group discussion** |
| 4. | 01-07-2021 | Till Exams | **Unit 4: Organometallic Compounds**  Organomagnesium compounds: Grignard reagents- Synthesis, structure and chemical reactions.  Organozinc Compounds: Synthesis and chemical reactions.  Organolithium Compounds: Synthesis and chemical reactions. | **Lecture, group discussion and seminar** |
| **Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans** | | | | |
| 5th April, 2021 | The teachers have completed the scheduled chapters and topics as shown in the lesson plan | | | |
| **Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans** | | | | |
| 3rd May, 2021 | The teachers have completed the scheduled chapters and topics as shown in the lesson plan | | | |
| **Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans** | | | | |
| 7th June, 2021 | The teachers have completed the scheduled chapters and topics as shown in the lesson plan | | | |
| **Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans** | | | | |
| 5th July, 2021 | The teachers have completed the scheduled chapters and topics as shown in the lesson plan | | | |
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**\*Any of these** – (i) Lecture Method; (ii) PPT; (iii) Online Sources; (iv) Group Discussion; (v) Case Studies etc.

Other Methods adopted by the teacher – Please write the specific teaching method

**(Lesson Plan)**

**MCM DAV College for Women, Sector – 36A, Chandigarh**

**Monthly Teaching Plans (Odd Semester)**

**Session – (2020-2021)**

**Name of the Teacher:** Dr. Rohini Kanwar

**Department :** P.G. Department of Chemistry

**Class: B.Sc III** Non-Medical **Subject:** Physical Chemistry **Section (s)** A&B

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| **S.No.** | **Date**  **(Monthly)** | | **Topics to be Covered** | **Academic Activity Undertaken\*** |
| **From** | **To** |
| 1 | 13-08-2020 | 31-08-2020 | **Elementary Quantum Mechanics-I:** Black-body radiation, Planck’s radiation law, photoelectric effect, heat capacity of solids, Bohr’s model of hydrogen atom (no derivation) and its defects, Compton effect. De Broglie hypothesis, the Heisenberg’s uncertainty principle, Sinusoidal wave equation, Hamiltonian operator, Schrodinger wave equation and its importance. | Lecture Method and Group Discussion |
| 2 | 01-09-2020 | 30-09-2020 | Physical interpretation of the wave function, postulates of quantum mechanics, particle in a one dimensional box. Schrodinger wave equation for H-atom, separation into three equations (without derivation), quantum numbers and their importance, hydrogen like wave functions, radial wave functions, angular wave functions. | Lecture Method and Group Discussion |
| 3 | 01-10-2020 | 30-10-2020 | **Elementary Quantum Mechanics-II:** Molecular orbital theory, basic ideas – criteria for forming M.O. from A.O., construction of M.O.’s by LCAO–H2+ ion. Calculation of energy levels from wave functions, physical picture of bonding and antibonding wave functions, concept of σ, σ∗, π, π\* orbitals and their characteristics. Hybrid orbitals – sp, sp2, sp3; calculation of coefficients of A.O.’s used in these hybrid orbitals.  Introduction to valence bond model of H2, comparison of M.O. and V.B. models. | Lecture Method and Group Discussion |
| 4 | 03-11-2020 | 28-11-2020 | **Photochemistry-I:** Interaction of radiation with matter, difference between thermal and photochemical processes. Laws of Photochemistry: Grothus – Drapper law, Stark – Einstein law, Jablonski diagram depicting various processes occurring in the excited state. | Lecture Method and Group Discussion |
| 5 | 1-12-2020 | 24-12-2020 | **Photochemistry-II:** Qualitative description of fluorescence, phosphorescence, non-radiative processes (internal conversion, intersystem crossing), quantum yield, | Lecture Method and Group Discussion |
| 6 | 1-01-2021 | Till exams | Photosensitized reactions – energy transfer processes (simple examples) Photochemistry of carbonyl compounds and alkenes Revision and Solution of previous years’ question papers | Lecture Method and Group Discussion |
| **Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans** | | | | |
| 7th September, 2020 | The teachers have completed the scheduled chapters and topics as shown in the lesson plan | | | |
| **Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans** | | | | |
| 5th October, 2020 | The teachers have completed the scheduled chapters and topics as shown in the lesson plan | | | |
| **Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans** | | | | |
| 3rd November, 2020 | The teachers have completed the scheduled chapters and topics as shown in the lesson plan | | | |
| **Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans** | | | | |
| 7th December, 2020 | The teachers have completed the scheduled chapters and topics as shown in the lesson plan | | | |

**\*Any of these** – (i) Lecture Method; (ii) PPT; (iii) Online Sources; (iv) Group Discussion; (v) Case Studies etc.

Other Methods adopted by the teacher – Please write the specific teaching method

**Sample Format (Lesson Plan)**

**MCM DAV College for Women, Sector – 36A, Chandigarh**

**Monthly Teaching Plans (Even Semester)**

**Session – (2020-2021)**

**Name of the Teacher:** Dr. Rohini Kanwar

**Department :** P.G. Department of Chemistry

**Class: B.Sc III** Non-Medical **Subject:** Physical Chemistry **Section (s)** A&B

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S.No.** | **Date**  **(Monthly)** | | **Topics to be Covered** | **Academic Activity Undertaken\*** |
| **From** | **To** |
| 1 | 01-04-2021 | 30-04-2021 | **Spectroscopy :** Introduction : Electromagnetic radiation, regions of the spectrum, basic features of different spectrometers, statement of the Born-Oppenheimer approximation, degrees of freedom. | Lecture Method and Group Discussion |
| 2 | 01-05-2021 | 31-05-2021 | **Rotational Spectrum:** Diatomic molecules. Energy levels of a rigid rotor (semi – classical principles), selection rules, spectral intensity, determination of bond length, qualitative description of non-rigid rotor, isotope effect. | Lecture Method and Group Discussion |
| 3 | 01-06-2021 | 30-06-2021 | **Solid State-I:**  Definition of space lattice, unit cell and Miller Indices  Laws of Crystallography – (i) Law of Constancy of Interfacial Angles, (ii) Law of Rationality of Indices, (iii) Law of Symmetry. Symmetry elements in crystals. | Lecture Method and Group Discussion |
| 4 | 01-07-2021 | Till exams | **Solid State-II:** X-ray diffraction by crystals. Derivation of Bragg equation. Determination of crystal structure of NaCl, KCl and CsCl (Laue’s method and powder method). Applications of Powder diffraction for structure determination, Thermal and photochemical reaction in solid state | Lecture Method and Group Discussion |
| |  |  | | --- | --- | | **Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans** | | | 5th April, 2021 | The teachers have completed the scheduled chapters and topics as shown in the lesson plan | | **Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans** | | | 3rd May, 2021 | The teachers have completed the scheduled chapters and topics as shown in the lesson plan | | **Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans** | | | 7th June, 2021 | The teachers have completed the scheduled chapters and topics as shown in the lesson plan | | **Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans** | | | 5th July, 2021 | The teachers have completed the scheduled chapters and topics as shown in the lesson plan | | | | | |

**\*Any of these** – (i) Lecture Method; (ii) PPT; (iii) Online Sources; (iv) Group Discussion; (v) Case Studies etc.

Other Methods adopted by the teacher – Please write the specific teaching method