

# Lesson Plan (2024-25) - ODD SEMESTER

Name of the Assistant/ Associate Professor:- DR. SUMAN KUMARI

Class and Section: M.Sc. (F) Sec.-A (3<sup>rd</sup> semester)

C4-6 days

Subject: INORGANIC CHEMISTRY SPECIAL-I (Medicinal and Bioinorganic Chemistry)

| Week | Date       | Topics                                                                         |
|------|------------|--------------------------------------------------------------------------------|
| 1.   | 22.07.2024 |                                                                                |
|      | 23.07.2024 |                                                                                |
|      | 24.07.2024 |                                                                                |
|      | 25.07.2024 | Biochemical basis of essential metal deficient diseases:                       |
|      | 26.07.2024 | Iron, Copper and Zinc deficiencies and their                                   |
|      | 27.07.2024 | therapies. Different classes of Inorg. drugs.                                  |
| 2.   | 29.07.2024 |                                                                                |
|      | 30.07.2024 |                                                                                |
|      | 31.07.2024 | SHAHEED UDHAM SINGH MARTYRDOM DAY                                              |
|      | 01.08.2024 | Inorganic Compounds as antacids.                                               |
|      | 02.08.2024 | Drugs in hypo and hyper activity of thyroids.                                  |
|      | 03.08.2024 | porphyrins, metalloporphyrins.                                                 |
| 3.   | 05.08.2024 |                                                                                |
|      | 06.08.2024 |                                                                                |
|      | 07.08.2024 |                                                                                |
|      | 08.08.2024 | Role of alkali/alkaline earth metals in bio-                                   |
|      | 09.08.2024 | systems. Bioinorganic Chem. of $\text{Na}^+$ , $\text{K}^+$ , $\text{Mg}^{2+}$ |
|      | 10.08.2024 | and $\text{Ca}^{2+}$ . Ionophores.                                             |
|      |            |                                                                                |
| 4.   | 12.08.2024 |                                                                                |
|      | 13.08.2024 |                                                                                |
|      | 14.08.2024 |                                                                                |
|      | 15.08.2024 | INDEPENDENCE DAY                                                               |
|      | 16.08.2024 | Structure and functions of hemoglobin and myog.                                |
|      | 17.08.2024 | Test: Unit I <sup>st</sup>                                                     |
|      |            |                                                                                |
| 5.   | 19.08.2024 | RAKSHA BANDHAN                                                                 |
|      | 20.08.2024 |                                                                                |
|      | 21.08.2024 | Metal ions in Biological system: fundamentals                                  |
|      | 22.08.2024 | of inorg. biochem, essential, non-essential and                                |
|      | 23.08.2024 | trace elements in bio-systems.                                                 |
|      | 24.08.2024 |                                                                                |
| 6    | 26.08.2024 | JANMASHTAMI                                                                    |
|      | 27.08.2024 |                                                                                |

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| 6    | 28.08.2024 |                                                                |
|      | 29.08.2024 | Active transport of cations across membranes                   |
|      | 30.08.2024 | Sodium Pump, Blood clotting.                                   |
|      | 31.08.2024 | Neurotransmitter.                                              |
| Week | 02.09.2024 |                                                                |
| 7.   | 03.09.2024 |                                                                |
|      | 04.09.2024 |                                                                |
|      | 05.09.2024 | Metal storage transport and Bio-mineralization                 |
|      | 06.09.2024 | Ferritin, transferrin and                                      |
|      | 07.09.2024 | Siderophores.                                                  |
| Week | 09.09.2024 |                                                                |
| 8.   | 10.09.2024 |                                                                |
|      | 11.09.2024 |                                                                |
|      | 12.09.2024 | Metal ions as antioxidants, metal ion                          |
|      | 13.09.2024 | enhancing catalytic activity of enzymes                        |
|      | 14.09.2024 | Inhibitions as Competitive and Non-Competitive                 |
| Week | 16.09.2024 |                                                                |
| 9.   | 17.09.2024 |                                                                |
|      | 18.09.2024 |                                                                |
|      | 19.09.2024 | Carcinogens and Carcinostatic agents.                          |
|      | 20.09.2024 | Role of zinc in tumor growth and inhibition.                   |
|      | 21.09.2024 | Anticancer activity and mech. of Platinum Comp <sup>plex</sup> |
|      | 23.09.2024 | SHAHEEDI DIVAS.                                                |
| Week | 24.09.2024 |                                                                |
| 10.  | 25.09.2024 |                                                                |
|      | 26.09.2024 | Anticancer activity of Rhodium, Copper and gold                |
|      | 27.09.2024 | Complexes. Anticancer activity of selenium.                    |
|      | 28.09.2024 | Alkylating agents as anticancer drugs.                         |
| Week | 30.09.2024 |                                                                |
| 11.  | 01.10.2024 |                                                                |
|      | 02.10.2024 | MAHATMA GANDHI JAYANTI                                         |
|      | 03.10.2024 | MAHARAJA AMRASEN JAYANTI                                       |
|      | 04.10.2024 | Antibacterial and antiviral properties of                      |
|      | 05.10.2024 | metal complexes and chelating drugs.                           |
| Week | 07.10.2024 |                                                                |
| 12.  | 08.10.2024 |                                                                |

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|      |  | 09.10.2024 |                                              |
| 12.  |  | 10.10.2024 | Mechanism of metal ion induced toxicity.     |
|      |  | 11.10.2024 | Interaction b/w orally administered drugs.   |
|      |  | 12.10.2024 | DUSSEHRA                                     |
| Week |  | 14.10.2024 |                                              |
|      |  | 15.10.2024 |                                              |
| 13   |  | 16.10.2024 |                                              |
|      |  | 17.10.2024 | MAHARSHI VALMIKI JAYANTI                     |
|      |  | 18.10.2024 | Ligand induced toxicity.                     |
|      |  | 19.10.2024 | Interference with haemoglobin in oxygen T.S. |
| Week |  | 21.10.2024 |                                              |
|      |  | 22.10.2024 |                                              |
| 14.  |  | 23.10.2024 |                                              |
|      |  | 24.10.2024 | Beneficial effects of ligand chelation.      |
|      |  | 25.10.2024 | Nuclear medicine therapy.                    |
|      |  | 26.10.2024 | Test: 2nd unit.                              |
| Week |  | 04.11.2024 |                                              |
|      |  | 05.11.2024 |                                              |
| 15.  |  | 06.11.2024 |                                              |
|      |  | 07.11.2024 | Zinc enzymes - Carboxypeptidase, Carbonic    |
|      |  | 08.11.2024 | anhydrase, alkaline phosphatase and alcohol  |
|      |  | 09.11.2024 | dehydrogenase. Iron Enzymes.                 |
| Week |  | 11.11.2024 |                                              |
|      |  | 12.11.2024 |                                              |
| 17.  |  | 13.11.2024 |                                              |
|      |  | 14.11.2024 | Copper enzymes.                              |
|      |  | 15.11.2024 | GIURU NANAK DEV JAYANTI                      |
|      |  | 16.11.2024 | Test: unit 3rd.                              |
| Week |  | 18.11.2024 |                                              |
|      |  | 19.11.2024 |                                              |
| 18   |  | 20.11.2024 |                                              |
|      |  | 21.11.2024 | Molybdenum oxidotransferase enzymes -        |
|      |  | 22.11.2024 | Xanthine oxidase Co-enzymes - Vitamin B12    |
|      |  | 23.11.2024 | Test - unit 4th.                             |
| Week |  |            |                                              |
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# Lesson Plan (2024-25) - ODD SEMESTER

Name of the Assistant/ Associate Professor:- DR. SUMAN KUMARI

Class and Section: M.Sc (Previous)

Subject: Biology for chemist (1-3 days)

| Week | Date       | Topics                                                       |
|------|------------|--------------------------------------------------------------|
| 1.   | 01.08.2024 | General Introduction: cell biology, Discovery of cell        |
|      | 02.08.2024 | St. of Prokaryotic and Eukaryotic cells.                     |
|      | 03.08.2024 | Classification of cell types.                                |
|      |            |                                                              |
| 2.   | 05.08.2024 | Comp'n of Plant and animal cycle. Mitosis & Meiosis          |
|      | 06.08.2024 | Cellular org'n Biomembranes. fluid mosaic Model              |
|      | 07.08.2024 | Cyt. organelles functions. Catabolism and anabolism          |
|      | 08.08.2024 |                                                              |
|      | 09.08.2024 |                                                              |
|      | 10.08.2024 |                                                              |
| 3.   | 12.08.2024 | ATP-The biological energy currency.                          |
|      | 13.08.2024 | Essential amino acids Isoelectric PH, enzymatic hyd.         |
|      | 14.08.2024 | Secondary st. of Proteins, $\alpha$ -helix, $\beta$ -sheets. |
|      | 15.08.2024 | INDEPENDENCE DAY                                             |
|      | 16.08.2024 |                                                              |
|      | 17.08.2024 |                                                              |
|      |            |                                                              |
| 4.   | 19.08.2024 | RAKSHA BANDHAN                                               |
|      | 20.08.2024 | Triple helix st. of Collagen. Quaternary st.                 |
|      | 21.08.2024 | Denaturation of Proteins. Carbohydrates.                     |
|      | 22.08.2024 |                                                              |
|      | 23.08.2024 |                                                              |
|      | 24.08.2024 |                                                              |
| 5    | 26.08.2024 | JANMASHTIAMI                                                 |
|      | 27.08.2024 | St. and biological func'n of monosaccharides.                |
|      | 28.08.2024 | Glucose and fructose; Galactose, Sucrose.                    |
|      | 29.08.2024 |                                                              |
|      | 30.08.2024 |                                                              |
|      | 31.08.2024 |                                                              |
| Week |            |                                                              |

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| Week | 02.09.2024 | Lactose and Maltose - St. and Biological functions.       |
| 6    | 03.09.2024 | Structural Polysaccharides: Cellulose, Chitin             |
|      | 04.09.2024 | Starch, Glycogen, Lipids and fatty acids.                 |
|      | 05.09.2024 |                                                           |
|      | 06.09.2024 |                                                           |
|      | 07.09.2024 |                                                           |
| Week | 09.09.2024 | Essential fatty acids. $\beta$ -oxidation of fatty acids. |
| 7.   | 10.09.2024 | Structure of nucleotides. DNA.                            |
|      | 11.09.2024 | Test of Unit - 1st.                                       |
|      | 12.09.2024 |                                                           |
|      | 13.09.2024 |                                                           |
|      | 14.09.2024 |                                                           |
| Week | 16.09.2024 | RNA St, conformation and (W.C.M of DNA)                   |
| 8.   | 17.09.2024 | Replication of DNA and Transcription                      |
|      | 18.09.2024 | Translation of genetic material, Genetic code             |
|      | 19.09.2024 |                                                           |
|      | 20.09.2024 |                                                           |
|      | 21.09.2024 |                                                           |
| Week | 23.09.2024 | SHAHEEDI DIVAS                                            |
| 9.   | 24.09.2024 | Universality of the Code, Codon, Anticodon                |
|      | 25.09.2024 | St. of RNA, Protein Biosynthesis.                         |
|      | 26.09.2024 |                                                           |
|      | 27.09.2024 |                                                           |
|      | 28.09.2024 |                                                           |
| Week | 30.09.2024 | Processing of the Peptide Chain                           |
| 10   | 01.10.2024 | Test - 2nd unit                                           |
|      | 02.10.2024 | MAHATMA GANDHI JAYANTI                                    |
|      | 03.10.2024 | MAHARAJA BHIRASEN JAYANTI                                 |
|      | 04.10.2024 |                                                           |
|      | 05.10.2024 |                                                           |
| Week |            |                                                           |
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| Week | Date       | Topics                                                                                                |
|------|------------|-------------------------------------------------------------------------------------------------------|
| 12   | 07.10.2024 | Introduction about oxygen carriers<br>Porphyrins: Metalloporphyrins<br>St and functions of hemoglobin |
|      | 08.10.2024 |                                                                                                       |
|      | 09.10.2024 |                                                                                                       |
|      | 10.10.2024 |                                                                                                       |
|      | 11.10.2024 |                                                                                                       |
|      | 12.10.2024 |                                                                                                       |
| 13   | 14.10.2024 | Dussehra<br>St. and functions of myoglobin                                                            |
|      | 15.10.2024 | Photosynthesis Process, chlorophyll                                                                   |
|      | 16.10.2024 | Hemoproteins.                                                                                         |
|      | 17.10.2024 | MAHARSHI VALMIKI JAYANTI                                                                              |
|      | 18.10.2024 |                                                                                                       |
|      | 19.10.2024 |                                                                                                       |
| 14   | 21.10.2024 | General int <sup>n</sup> about Atmosphere and chemical                                                |
|      | 22.10.2024 | Comp <sup>n</sup> of atm. Atmospheric structure                                                       |
|      | 23.10.2024 | Test: Unit - 3 <sup>rd</sup>                                                                          |
|      | 24.10.2024 |                                                                                                       |
|      | 25.10.2024 |                                                                                                       |
|      | 26.10.2024 |                                                                                                       |
| 15   | 04.11.2024 | Earth's radiation balance.                                                                            |
|      | 05.11.2024 | Oxides of N, C, S and their effects.                                                                  |
|      | 06.11.2024 | Green House effect                                                                                    |
|      | 07.11.2024 |                                                                                                       |
|      | 08.11.2024 |                                                                                                       |
|      | 09.11.2024 |                                                                                                       |
| 16   | 11.11.2024 | Acid rain and photochemical smog                                                                      |
|      | 12.11.2024 | Depletion of ozone and their effect                                                                   |
|      | 13.11.2024 | Test: Unit IV <sup>th</sup> .                                                                         |
|      | 14.11.2024 |                                                                                                       |
|      | 15.11.2024 | GURU NANAK DEV JAYANTI                                                                                |
|      | 16.11.2024 |                                                                                                       |
| 17   | 18.11.2024 | Revision of Unit I                                                                                    |
|      | 19.11.2024 | Revision of Unit II                                                                                   |
|      | 20.11.2024 | Revision of Unit III & IV                                                                             |

# Lesson Plan (2024-25) - ODD SEMESTER

Name of the Assistant/ Associate Professor:- DR. SUMAN KUMARI

Class and Section: B.Sc IInd (3rd semester) N.M & M

Subject: Inorganic chemistry and organic chemistry

| Week    | Date       | Topics                                                                                      |
|---------|------------|---------------------------------------------------------------------------------------------|
| 1.      | 22.07.2024 |                                                                                             |
|         | 23.07.2024 |                                                                                             |
|         | 24.07.2024 | Monohydric alc. nomenclature, Methods of form <sup>n</sup> by reduction of al. and Ketones. |
|         | 25.07.2024 | Def <sup>n</sup> of T.E. Position in the P.T. General characteristic                        |
|         | 26.07.2024 | Properties of d-Block elements.                                                             |
|         | 27.07.2024 |                                                                                             |
| 2.      | 29.07.2024 |                                                                                             |
|         | 30.07.2024 |                                                                                             |
|         | 31.07.2024 | <b>SHAHEED UDHAM SINGH MARTYRDOM DAY</b>                                                    |
|         | 01.08.2024 | Carboxylic acids and esters.                                                                |
|         | 02.08.2024 | Comp <sup>n</sup> of Properties of 3d elements with 4d and 5d                               |
|         | 03.08.2024 | elements with ref. only to ionic radii. O.S.                                                |
| 3.      | 05.08.2024 |                                                                                             |
|         | 06.08.2024 |                                                                                             |
|         | 07.08.2024 | Hydrogen bonding. Acidic Nature.                                                            |
|         | 08.08.2024 | Reactions of alcohols.                                                                      |
|         | 09.08.2024 | Stability of various O.S and e.m.f. Structure                                               |
|         | 10.08.2024 | and Properties of TiO <sub>2</sub> and VOCl <sub>2</sub>                                    |
| 4.      | 12.08.2024 |                                                                                             |
|         | 13.08.2024 |                                                                                             |
|         | 14.08.2024 | Int: Dihydric alcohols.                                                                     |
|         | 15.08.2024 | <b>INDEPENDENCE DAY</b>                                                                     |
|         | 16.08.2024 | Structure and Properties of FeCl <sub>3</sub> and CuCl <sub>2</sub>                         |
|         | 17.08.2024 | Structure and Properties of Ni(CO) <sub>4</sub>                                             |
| 5.      | 19.08.2024 | <b>RAKSHA BANDHAN</b>                                                                       |
|         | 20.08.2024 |                                                                                             |
|         | 21.08.2024 | Nomenclature, methods of formation.                                                         |
|         | 22.08.2024 | Chemical Rx <sup>n</sup> of vicinal glycols.                                                |
|         | 23.08.2024 | Introduction: Co-ordination Compounds.                                                      |
|         | 24.08.2024 | Test: Unit 1 <sup>st</sup>                                                                  |
| Week 6. | 27.08.2024 |                                                                                             |

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| 6.   | 28.08.2024 | oxidative cleavage and Pinacol-Pinacolone. R.   |
|      | 29.08.2024 | Test: Alcohols.                                 |
|      | 30.08.2024 | Werner's theory of Co-ordination Compounds.     |
|      | 31.08.2024 | E.A.N. Rule and chelates.                       |
| Week | 02.09.2024 |                                                 |
|      | 03.09.2024 |                                                 |
| 7.   | 04.09.2024 | Synthesis of Epoxides.                          |
|      | 05.09.2024 | Acid and base-catalyzed ring op. of epoxides.   |
|      | 06.09.2024 | Nomenclature of Co-ordination Compounds.        |
|      | 07.09.2024 | Isomerism in Co-ordination Compounds.           |
| Week | 09.09.2024 |                                                 |
|      | 10.09.2024 |                                                 |
| 8.   | 11.09.2024 | Orientation of epoxide ring opening.            |
|      | 12.09.2024 | Rxn of Grignard and organolithium reagents.     |
|      | 13.09.2024 | Optical isomerism in Co-ordination Compounds.   |
|      | 14.09.2024 | Test: Chemistry of d-Block elements.            |
| Week | 16.09.2024 |                                                 |
|      | 17.09.2024 |                                                 |
| 9.   | 18.09.2024 | Nomenclature, st and bonding of Phenol.         |
|      | 19.09.2024 | Preparation of Phenols.                         |
|      | 20.09.2024 | Valence bond theory of Transition               |
|      | 21.09.2024 | Metal Complexes.                                |
| Week | 23.09.2024 | SHAHEEDI DIVAS                                  |
|      | 24.09.2024 |                                                 |
| 10.  | 25.09.2024 | Physical Prop. and acidic character.            |
|      | 26.09.2024 | Comparative acidic st. of alcohols and phenols. |
|      | 27.09.2024 | Revision and Problems solved: 2nd chapter       |
|      | 28.09.2024 | Test: 2nd unit.                                 |
| Week | 30.09.2024 |                                                 |
|      | 01.10.2024 |                                                 |
| 11.  | 02.10.2024 | MAHATMA GANDHI JAYANTI                          |
|      | 03.10.2024 | MAHARAJA AMRASEN JAYANTI                        |
|      | 04.10.2024 | Introduction about Non-aqueous solvents.        |
|      | 05.10.2024 | Physical Properties of solvents                 |
| Week | 07.10.2024 |                                                 |
|      | 08.10.2024 |                                                 |
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| 12.  | 09.10.2024 | Resonance stabilization of Phenoxide ion. Rx <sup>n</sup> of       |
|      | 10.10.2024 | Phenols - Electrophilic aromatic Subs <sup>n</sup> Rx <sup>n</sup> |
|      | 11.10.2024 | Types of solvents and their general characteristics                |
| Week | 12.10.2024 | DUSSEHRA                                                           |
|      | 14.10.2024 |                                                                    |
|      | 15.10.2024 |                                                                    |
| 13.  | 16.10.2024 | Test: Epoxides and Phenols.                                        |
|      | 17.10.2024 | MAHARSHI VALMIKI JAYANTI                                           |
|      | 18.10.2024 | Inorganic Chemical Reaction                                        |
|      | 19.10.2024 | Solubilities of compounds in liquid SO <sub>2</sub> .              |
|      | 21.10.2024 |                                                                    |
| Week | 22.10.2024 |                                                                    |
|      | 23.10.2024 | Absorption laws, molar absorptivity                                |
|      | 24.10.2024 | Analysis of UV spectra.                                            |
| 14.  | 25.10.2024 | Reactions in non-aqueous solvents with                             |
|      | 26.10.2024 | reference to liquid NH <sub>3</sub> and liquid SO <sub>2</sub>     |
|      |            |                                                                    |
| Week | 04.11.2024 |                                                                    |
|      | 05.11.2024 |                                                                    |
|      | 06.11.2024 | Types of electronic transition                                     |
| 16.  | 07.11.2024 | effect of conjugation and concept of Ch. and aux.                  |
|      | 08.11.2024 | Revision of Non-aq. solvents                                       |
|      | 09.11.2024 | Test: Non-aqueous solvents                                         |
|      |            |                                                                    |
| Week | 11.11.2024 |                                                                    |
|      | 12.11.2024 |                                                                    |
|      | 13.11.2024 | Bathochromic, hypsochromic and hyper and hypo                      |
| 17.  | 14.11.2024 | UV spectra of conjugated enes and enones.                          |
|      | 15.11.2024 | GURU NANAK JAYANTI                                                 |
|      | 16.11.2024 | Revision: 1st chapter                                              |
|      |            |                                                                    |
| Week | 18.11.2024 |                                                                    |
|      | 19.11.2024 |                                                                    |
|      | 20.11.2024 | Woodward-Fieser Rule, Cal. <sup>n</sup> of $\lambda_{max}$ of      |
| 18.  | 21.11.2024 | simple conjugated enes and enones.                                 |
|      | 22.11.2024 | Revision: Co-ordination compounds                                  |
|      | 23.11.2024 | Revision: Non-aqueous solvents.                                    |
|      |            |                                                                    |