JEEVAN CHANAN MAHILA MAHAVIDYALA
ASSANDH
ODD SEMESTER (2024-2025)
LESSON PLAN

Name of the Teacher: Ritika

Course Code: B23 CHE- 201

Class: B.Sc Second Semester

Paper: CHEMISTRY (Major)

Lesson Plan of Bridge Course			
S.No	**Period**	**Topics to Bridge Course**	**Academic Activity to be Organized**
1	11-20 FEB,2025	Topics according to syllabus GENERAL INTRODUCTION OF HYDROCARBONS AND PROPERTIES	DISCUSSION

Sr.No	**Period**	**Topic to be covered**	**Academic Activity to be organized**	**Practical to be covered**
1.	20 Feb-28Feb 2025	**Unit – 3** ALKANES AND CYCLOALKANES Topic : Nomenclature,Classification ISOMERISM, Methods of formation ,Mechanism of free radical halogenation ; Reactivity and Selectivity Nomenclature of cycloalkanes, Baeyers strain theory and its Limitations	Group Discussion	1.Determination of Mg^{2+} by EDTA

2.	1March-15March 2025	**Unit –3** ALKENES TOPICS: Nomenclature of alkenes, methods of formation, Hoffmann elimination and saytzeff rule and stability of alkenes Chemical Reactions: Electrophilic and free radical additions, hydroboration - oxidation, Oxymercuration-reduction, ozonolysis and hydration Markownikoff rule of addition	Class Test	2.To determine the viscosity of given liquid using Ostwald's viscometer

3.	15March-30March 2025	**Unit –2** Chemical Kinetics& Distribution Law Topics : Concept of reaction rates, factors influencing rate of reaction, order and molecularity of a reaction integrated rate expression for zero, first, Half life period of a reaction Arrhenius equation TOPICS: Nernst distribution law-its thermodynamic derivation, distribution law after association and dissociation of solute in one of the phases , Determination of degree of hydrolysis and hydrolysis constant of aniline hydrochloride	Class Test and GD	3. Separation of mixture of two organic compounds by TLC 4.To determine specific refractivity of at least two liquids by Refractometer
4.	1April-30April 2025	**Unit –1** Covalent Bond and ionic solids Topics: Valence Bond theory approach, shapes of simple inorganic molecules based on VSEPER theory and hybridization. MOT of homonuclear (N_2 ,O_2) and heteronuclear (CO,NO), DIPOLE MOMENT, %Ionic character in ionic bond TOPICS: Ionic structure, size effects, radius ratio and its limitation, concept of lattice energy, born habers cycle, fajan rule	PPT and GD	5.Qualitative anaylsis of any of the following inorganic cations and anions by paper chromatography (Pb^{2+}, Cu^{2}, Ni^{2+} ,Cl^{-},Br^{-})

5.	1-30May 2025	**Unit – 4** Hydrogen Bonding and Metallic bond Topics: Hydrogen Bonding - definition, types affects of hydrogen bonding on properties of substances, types of vanderwaal forces Metallic Bond - theories of metallic bond. Semiconductors - types and applications	Group Discussion and Mid Term Exam	

Topic of Assignments: - Compulsory Questions of All Units

PPT on the topics- Alkenes

JEEVAN CHANAN MAHILA MAHAVIDYALAYA
ASSANDH
ODD SEMESTER (2024-2025)
LESSON PLAN

Name of the Teacher: Ritika

Course Code: B23 CHE- 103

Class: B.Sc Second Semester

Paper: CHEMISTRY(Minor)

Lesson Plan of Bridge Course			
S.No	**Period**	**Topics to Bridge Course**	**Academic Activity to be Organized**
1	11-20FEB, 2025	Topics according to syllabus GENERAL INTRODUCTION OF PERIODIC TABLE	DISCUSSION

Sr.No	**Period**	**Topic to be covered**	**Academic Activity to be organized**	**Practical to be covered**
1.	15-27 Feb,2025	**Unit – 1** Atomic Properties **Topics:** Atomic and Ionic Radii, Ionisation Energy, Electron Affinity and electronegativity, trend in periodic table, effective nuclear charge, slater rule	Group Discussion	1.Determination of strength of Oxalic acid using NaOH

2.	1-30 March,2025	**Unit – 4** Gaseous State **Topics:** Kinetic Theory of gases, Calculation of root mean square velocity, average velocity, most probable velocity, collision diameter, collision number, collision frequency and mean free path	Class Test	2. Determination of Fe^{2+} ions using $KMnO_4$
3.	1April-30April,2025	**Unit – 3** Structure and Bonding in Organic compounds **Topics:** Localized and Delocalized Chemical Bond, Vander waal interactions, resonance conditions and resonance effect, hyperconjugation, inductive effect, electrometric effect and their comparison	PPT and Class test	3.To determine the surface tension of given liquid using stalagmometer by drop number method
4.	1-31 May,2025	**Unit – 2** Ionic Solids **Topics:** Stoichiometric and Non-Stoichiometric defects in crystals, Lattice energy and Born Haber Cycle, Solvation Energy and its relationship with solubility of ionic solids, Polarising power and Polarisibility of ions, Fajan's Rule	Class Test and GD	4.To prepare a sample of iodoform

Topic of Assignments: - Compulsory Questions of All Units

PPT on the topics: - Structure and Bonding in Organic compound

JEEVAN CHANAN MAHILA MAHAVIDYALAYA
ASSANDH
ODD SEMESTER (2024-2025)
LESSON PLAN

Name of the Teacher: Ms. Priyam Rana
Class: BSc 4th semester
Paper: Chemistry (Major)
Couse Code: B23-CHE-401

Lesson Plan of Bridge Course			
S.No	**Period**	**Topics to Bridge Course**	**Academic Activity to be Organized**
1	11-20Feb,2025	General introduction of periodic table and alcohols, phenols and aldehydes	Discussion

Sr.No	**Period**	**Topic to be covered**	**Academic Activity to be organized**	**Practical to be covered**
1.	21 Feb-15Mar,2025	**Unit – 1** **(Chemistry of d-block elements)** Definition of transition elements, General characteristic properties of d-block elements, comparision of ionic radii, 3d, 4d, 5d series elements, magnetic properties, stability of various oxidation states and Latimer and Frost diagrams, structure of some compounds of transition elements -TiO_2 , $VOCl_2$, $FeCl_3$, $CuCl_2$, $Ni(CO)_4$ **(Chemistry of f-block elements)** Lanthanide contraction, Oxidation states, magnetic properties, complex formation, colour and ionic radii Actinides: General characteristics of actinides, Transuranic elements, comparison of properties of Lanthanides and actinides with transition elements.	Group Discussion	1. To prepare salicylic acid from aspirin

2.	16-30Mar,2025	**Unit – 2** **(Theory of Qualitative and Quantitative Analysis)** Chemistry of analysis of various groups of basic and acid radicals, chemistry of identification of acid radicals in typical combination, common ion effect, solubility product, theory of precipitation, co-precipitation, post-precipitation, purification of precipitates.	Class Test	2. To prepare m-nitroaniline from m-dinitrobenzene
3.	1Apr-15April,2025	**Unit – 3** **(Thermodynamics)** First law of thermodynamics: statement, concepts of internal energy and enthalpy, Heat capacity, heat capacities at constant volume and pressure and their relationship, Joule-Thomson coefficient for ideal gas and real gas and inversion temperature, calculation of w, q, dU and dH for the expansion of ideal gases under isothermal and adiabatic conditions for reversible process, second law of thermodynamics, carnot cycles and its efficiency, concept of entropy, entropy as a function of V and T, entropy as a function of P and T **(Chemical equilibrium)** Concept of Equilibrium constant, Temperature dependence of equilibrium constant, Clausius-Clapeyron and its applications	GD and Class test	4. Qualitative analysis of mixture containing not more than four radicals Pb^{2+}, Cu^{2+},Fe^{3+},Ni^{2+}, Ca^{2+}, NH_4^+, CO_3^{2-}, NO_3^-, CH_3COO^-, Cl^-,Br^-, I^-, PO_4^{3-}, SO_4^{2-}

4.	16April-30May,2025	**Unit – 4** **(Alchols, Phenols and Aldehydes and Ketones)** Monohydric alchol: nomenclature, methods of formation by reduction of aldehydes, ketones, carboxlic acids and esters, Hydrogen bonding, Acidic nature, Reactions of alchols **(Phenols)** Nomenclature, structure and bonding, Preaparation, Fries Rearrangement, Claisen Rearrangement, Reimer-Tiemann reaction, Kolbe's Reaction **(Aldehydes and Ketones)** Nomenclature and structure of the carbonyl group, benzoin, Aldol , Perkin and Knoevenagel condensation, Condensation with ammonia and its derivatives, wittig Reaction, Mannich Reaction, Baeyer-Villiger oxidation of Ketones, Cannizzaro reaction, Clemmensen and Wolff-Kishner reductions	Class Test and PPT	

Topic of Assignments: - Compulsory Questions of All Units

PPT on the topics: - Chemistry of d and f block elements and organic reactions

JEEVAN CHANAN MAHILA MAHAVIDYALAYA
ASSANDH
ODD SEMESTER (2024-2025)
LESSON PLAN

Name of the Teacher: Priyam

Class: BSc 6th Semester

Course Code - CH - 304

Paper: Inorganic Chemistry

Lesson Plan of Bridge Course			
S.No	**Period**	**Topics to Bridge Course**	**Academic Activity to be Organized**
1	1 - 15 Jan,2025	General introduction of periodic table and alcohols, phenols and aldehydes	Discussion

Sr.No	**Period**	**Topic to be covered**	**Academic Activity to be organized**
1.	15Jan-10Feb2025	**Unit – 2 (CH-2)** Bioinorganic Chemistry Topics: Essential and Trace elements in biological processes, Metalloporphyrin with special reference to hemoglobin and myoglobin, biological role of alkali and alkaline earth metal ions with special reference to Ca^{2+}, Nitrogen Fixation	Group Discussion

2.	13Feb-15Mrach,2025	**Unit – 1 (CH-2)** **Acids and Bases, HSAB Concept** Topics: Arrhenius, Bronsted – Lowry, Lux-Flood, Solvent System and Lewis concepts of acids and bases, relative strength of acids and bases, Concept of Hard and Soft Acids and Bases, Symbiosis, Electronegativity and hardness and softness	Class Test
3.	15March-10April,2025	**Unit -1 (CH-10)** **Organometallics Chemistry** Topics: Definition, nomenclature and classification of organometallic compounds, Preparation, Properties, and bonding of alkyls of Li, Al, Hg and Sn, a brief account of metal ethylenic complexes, mononuclear carbonyls and the nature of bonding in metal carbonyls	Class Test and GD
4.	10-15 April,2025	**Unit – 2 (CH-2)** **Silicones and Phozphazenes** Topics: Silicones and Phosphazenes their preapartion, properties, structures and uses	Class Test

Topic of Assignments: - Compulsory Questions of All Units

PPT on the topics: - Bioinorganic Chemistry

JEEVAN CHANAN MAHILA MAHAVIDYALAYA
ASSANDH
ODD SEMESTER (2024-2025)
LESSON PLAN

Name of the Teacher: Ritika

Class: B.Sc 6th semester

Paper: ORGANIC CHEMISTRY

Sr.No	Period	Topic to be covered	Academic Activity to be organized
1.	15JAN -30JAN 2025	**Unit – 1 (CH-1)** **(Enolates)** Acidity of alpha hydrogen, alkylation of diethylmalonate and ethylacetoacetate Claisen Condensation and Keto- Enol tautomerism of Acetoacetate	Group Discussion
2.	1-28 FEB 2025	**Unit – 1 (CH-2)** **(HETEROCYCLIC COMPOUNDS)** Introduction: Molecular orbital picture &aromatic character of pyrrole, furan, thiophene and pyridine. Methods of synthesis and chemical reactions on the mechanism of electrophilic substitution. Mechanism of nucleophilic substitution reactions in pyridine derivatives. Comparison of basicity of pyridine, piperidine and pyrrole. Introduction to condensed five and six membered heterocycles. Preparation and reactions of indole quinoline and isoquinoline with special reference to fischer indole synthesis, Skarup synthesis and Bischler-Napieralski synthesis. Mechanism of EAS of quinoline and isoquinoline.	Class Test

3.	1MARCH-10MAY 2025	**Unit – 2 (CH-1)** **(AMINO ACIDS , PEPTIDES AND PROTEINS)** Classification of amino acid. Acid - Base behaviour, isoelectronic point and electrophoresis. Preparation of alpha amino acids. Structure and nomenclature of peptides and proteins. Classification of proteins. Peptide structure determination ,end group anaylsis ,selective hydrolysis of peptides Classical peptide synthesis, solid phase peptide synthesis. Structure of peptides and proteins; Primary and Secondary structure	GD and Class Test
4.	11MAY-30MAY 2025	**Unit – 2** **(Ch-2)** **Synthetic Polymer** Addition or chain growth polymerization ,Free radical vinyl polymerization ,ionic vinyl polymerization ,Zeiglar-Natta polymerization and vinyl polymers Condensation or step growth polymerization .polyesters ,polyesters ,polyamides ,phenol,formalaldehyde resins . Natural and synthetic rubbers.	Class Test and PPT

Topic of Assignments: - Compulsory Questions of All Units

PPT on the topics: - ORGANIC SYNTHESIS VIA ENOLATES

JEEVAN CHANAN MAHILA MAHAVIDYALAYA
ASSANDH
ODD SEMESTER (2024-2025)
LESSON PLAN

Name of the Teacher: Ms Priyam Rana and Ms Ritika Gutt
Class: B.Sc 6th semester
Paper: PHYSICAL CHEMISTRY

Sr.No	Period	Topic to be covered	Academic Activity to be organized	Practicals to be performed
1.	15Feb-10Mar,2025	**Unit – 1 (Ms RITIKA)** **(Photochemistry)** Interaction of radiation with matter, difference between thermal and photochemical processes, Laws of Photochemistry: Grotthus - Drapper Law, Stark-Einstein Law, Jablonski Diagram depicting various processes occurring in the excited state, fluorescence, phosphorescence, non-radiative processes, quantum yield, photosensitized reactions-energy transfer processes	Group Discussion	11. To identify the given acid radical. 12 To identify the given acid Radical 13. To identify the given acid and basic radical of a given compound
3.	10-30 Mar,2025	**Unit – 1 (Ms RITIKA)** **(Introduction to statistical mechanics)** Need for statistical thermodynamics, thermodynamic probability, Maxwell-Boltzmann distribution statics, Born-Oppenheimer approximation, partition function and its physical significance, Factorization of partition function	GD and PPT	14. To identify the given acid and basic radical of a given compound 15. To identify the given acid and basic radical of a given compound 16. To identify the given acid and basic radical of a given compound

4.	1-20 April,2025	**Unit – 2 (Ms PRIYAM) (PHASE EQUILIBRIUM)** Statement and meaning of the terms – phase, component and degree of freedom, thermodynamic derivation of Gibbs phase rule, phase equilibria of one component system – Example – water system, phase equilibria of two component systems solid-liquid equilibria, simple eutectic Example Pb-Ag system, desiverisation of lead	Class Test	17. To identify the given acid and basic radical of a given compound 18. To identify the given acid and basic radical of a given compound 19. To identify the given acid and basic radical of a given compound
5.	20April-30 May,2025	**Unit – 2 (Ms. PRIYAM) (Solutions and colligative properties)** Ideal and Non-Ideal solutions, methods of expressing concerntrations of solutions, Dilute solutions, Raoult 's law, Colligative properties: 1. Relative lowering of vapour pressure 2. Elevation in boiling point 3. Depression in frezzing point 4. Osmotic Pressure Thermodynamic derivation of relation between amount of solute and elevation in boiling point and depression in freezing point, applications in calculating molar masses of normal, dissociated and associated solutes in solution	Group Discussion and Mid Term Exam	

Topic of Assignments: - Compulsory Questions of All Units

PPT on the topics: - Jablonski diagram, Phase equilibria of one component system and two component system