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V.V.SANGHA'S
Smt. A.S.M. COLLEGE FOR WOMEN, BALLARI
DEPARTMENT OF CHEMISTRY
TEACHING PLAN

Academic year: 2024-2025

Semester: First (SEP)

Course: B.Sc.

Faculty: BASAVARAJ S H

Unit No	Title of the Chapter& Description	Period/ Month	No of hours allotted	Hours taken /Conducted	Teaching pedagogy/ methodology used
1	Unit-1. Inorganic chemistry <u>Atomic structure</u> Shapes of s, p and d orbitals. Aufbau and Pauli exclusion principles, Hunds multiplicity rule electronic configuration of the elements, effective nuclear charge	12/08/24 To 06/09/24	07	08	BLACK BOARD AND CHALK
	<u>Periodic properties</u> Atomic and ionic radii, ionization energy, electron affinity and electro negativity definition, methods of determination or evaluation, trends in periodic table and applications in predicting and explaining the chemical behavior	07/09/24 To 9/10/24	05	06	BLACK BOARD AND CHALK
	<u>Principles of volumetric analysis</u> Titration, types of titrations, equivalence point, choice of indicator, standard solutions (Normality, Molarity & PPM).primary standard. a) Acid-base titrations: types, acid base indicator Ostwald's theory, indicator constant and PH. Derivation of an expression for the relationship between PH and indicator constant. b) Precipitation titrations: adsorption indicator, determination of chloride. c) Redox titration: redox indicators and their choice (with reference to biphenyl amine).	10/10/24 To 13/11/24	08	10	BLACK BOARD AND CHALK
2	UNIT-II : ORGANIC REACTION MECHANISM <u>Basic of Organic Reaction Mechanism</u> Types of bond cleavage , Reactive intermediates – Carbonations, Carboanions, Carbon free radicals and Carbenes .Types of reagents – Electrophiles and nucleophiles. Types of organic reactions –Addition, substitution and elimination with examples,	14/11/24 To 22/11/24	02	03	BLACK BOARD AND CHALK
	<u>Alkanes:</u> Nomenclature (IUPAC) and isomerism in alkanes up to C6. General methods of synthesis (Reduction of alcohols, aldehydes/ketones and carboxylic acids, Wurtz reaction, Kolbe's reaction, Corey–House reaction.	23/11/24 To 04/12/24	02	04	BLACK BOARD AND CHALK

	Relative reactivity of alkanes in halogenations. Free radical mechanism of Chlorination of methane, pyrolysis.				
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DEPARTMENT OF CHEMISTRY
TEACHING PLAN

Academic year: 2024-2025

Semester: Fifth (5.2)

Course: B.Sc.

Faculty: BASAVARAJ S H

Unit No	Title of the Chapter& Description	Period/ Month	No of hours allotted	Hours taken /Conducted	Teaching pdagogy/ methodology used
I	Unit – 1 <u>Inorganic chemistry</u> <u>Modern concepts of acids and bases</u> Lux-Flood and Usanovich concepts of acid and bases. Solvent system and levelling effect. Hard-soft acids and bases, Classification and theoretical backgrounds.	07/10/24 To 25/10/24	3	5	BLACK BOARD AND CHALK
	<u>Non-Aqueous solvents:</u> Classification of solvents and properties of solvents(dielectric constant and Donor and acceptor properties) <u>Protic solvents</u> : Anhy.H ₂ SO ₄ ,HF and Glacial acetic acid. <u>Aprotic Solvents:</u> Liq. SO ₂ , N ₂ O ₄ and BrF ₃ . Solutions of metal in Liq.Ammonia, hydrated electron, super acids and super bases.	26/10/24 To 15/10/24	4	6	BLACK BOARD AND CHALK
	<u>Chemistry of Main group elements:</u> Structure and bonding in boranes: Example: B ₂ H ₆ , B ₄ H ₁₀ and B ₅ H ₉ . Structure and bonding in Carboranes: Example: C ₂ B ₁₀ H ₁₂ , C ₂ B ₉ H ₁₃ and C ₂ B ₆ H ₁₂ . Wade's rules, Borazine and phosphazines and S,N-compounds.	16/10/24 To 5/11/24	4	5	BLACK BOARD AND CHALK
	<u>M-M Bond and Metal clusters:</u> Halide clusters bonding in (Re ₂ Cl ₈) ²⁻ .Metal Carbonyl Clusters –LNCC's and HNCC's. Electron Counting in carbonyl Clusters Wade-Mingos and Lauher rule.	6/11/24 To 27/11/24	4	5	BLACK BOARD AND CHALK
II	<u>Unit-2 : Organic Chemistry</u> <u>Carbohydrates:</u> Introduction, Monosaccharides- Open and ring structure of glucose. Mutarotation, Epimerization.	28/11/24 To 30/11/24	2	2	BLACK BOARD AND CHALK
	Interconversion reaction: (Aldose to ketoses and Ketose to aldose, Chain Elongation and Killani Fischer Method and chain Degradation process- Ruff's Method) Determination of Ring size of glucose (Methylation).	1/12/24 To 4/12/24	3	3	BLACK BOARD AND CHALK
	Determination of Configuration Conformation analysis of Monosaccharides(Glucose and Galactose). Amino sugars: Structural formulae and conformation of alpha and Beta (Glucosamine and Galactosamine).Disaccharides- Structure and Elucidation of Sucrose. Polysaccharides-Partial structural Formulae of Starch and Cellulose. Application of starch in titrimetric analysis.	05/12/24 To 11/12/24	3	4	BLACK BOARD AND CHALK

III	Unit-3: Physical Chemistry Quantum Mechanics: Introduction, Black body radiation and Planck's Radiation law. Photoelectric effect, Compton effect and de-Broglie Concept and uncertainty Principle. Concepts of Operators: Laplacian, Hamiltonian, Linear and Hermitian Operators. Commutative and Non-Commutative of operators. Eigen function and Eigen values. Postulates of Quantum mechanics and Solutions of Schrodinger wave Equation for a free particle in one dimensional box.	12/12/24 To 14/12/24	4	4	BLACK BOARD AND CHALK
	Colligative Properties: Lowering of vapour Pressure: Raoult's (to be derived) Relation Between relative lowering of pressure and molar mass (to be derived). Experimental determination of lowering of molar mass of solute by dynamic method (Numerical Problems). Elevation in boiling Point: Definition and it's relation to lowering of vapour pressure and molar mass (to be derived). Ebullioscopic Constant of solution and it's relation to boiling point (Only equation). Experimental determination of molar mass of the solute by walker-Lumsden method. (Numerical problems)	15/12/24 To 17/12/24	3	3	BLACK BOARD AND CHALK


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