

Satyaniketan's

Adv. M.N.Deshmukh Art's , Sci. and Commerce College Rajur,

T.Y. B.Sc.Chemistry : CH508 (CBCS 2019 Pattern)

CHEMISTRY OF BIOMOLECULES

TEACHING PLAN 2022-2023

(Frist Term)- SEMESTER-V

Sr.No.	MONTH	TOPIC	LECTURE
1	JUNE - '22	<p>Introduction to Molecular Logic of Life Unicellular and multicellular organisms, prokaryotes and eukaryotes. List of cell organelles and its functions. Molecules that constitute the organisation of cell and its organelles. types of bonds in biomolecules Carbohydrates Introduction, classification of carbohydrates, their structures and biological significance. Concept of anomers, epimers</p>	03 L 02 L
2	JULY - '22	<p>Reducing and non-reducing sugars, mutarotation, inversion. Reactions of glucose with acid, base, phenyl hydrazine, oxidizing agents, reducing agents and its significance, Glycosidic bonds. Lipids Introduction, classification of lipids, their structures and biological significance. Reactions of Lipids-Saponification Hydrolysis, emulsification, oxidation</p>	05 L 03 L
3	AUG- '22	<p>Concept of saponification number, acid number, iodine number and their significance. Rancidity. Types of Lipoproteins and their significance. Blood group substances. Amino acids and Proteins Amino acids: classification of amino acids. Cocept of ampholytes, isoelectric pH, zwitter ions, titration curve of glycine. Reactions of amino acid with Ninhydrin, Sanger's, Dansyl chloride, Dabsyl chloride and Edmann's reagents and their significance.</p>	03 L 06 L
4	SEPT- '22	<p>Peptide bond and its features. Proteins: Classification based on function, nutrition and composition. Structural organization of proteins- primary, secondary, tertiary and quaternary structures. Enzymes Classification of enzymes. Features of active site. ES complex formation, Enzyme specificity, Factors affecting enzyme activity. Basics of Enzyme kinetics. MM and LB equation and Significance of Km. Types of Enzyme inhibitions. Concept of Conjugated enzymesHoloenzyme, Apoenzyme, prosthetic groups. Coenzymes of vitamins. Industrial applications of enzymes.</p>	02 L 06 L
5	OCT- '22	Hormones	06 L

		Introduction to endocrine glands and their hormones. Biochemical nature of hormones, Mechanism of action of lipophilic and hydrophilic hormones.	
6	NOV- '22	Holiday (SEMESTER – VI)	
7	DEC- '22	Retrosynthetic Analysis and Application Introduction, Different terms used - Disconnection, Synthons, Synthetic equivalence, FGI, TM. One group disconnection, Retrosynthesis and Synthesis of target molecules: Acetophenone, Crotonaldehyde, Cyclohexene, Benzylbenzoate, and Benzyl diethyl malonate.	06 L
8	JAN- '23	Organic Reaction Mechanism and Synthetic Applications 1. Chemistry of reactive intermediates (carbocations, carbanions, free radicals, carbenes, nitrenes, benzyne etc...) 2. Wolff rearrangement (Step up). 3. Hofmann rearrangement (Step down). 4. Simmons-Smith reaction	06 L
9	FEB- '23	5. Michael reaction, 6. Wittig reaction and McMurry reaction, 7. Diels-Alder reaction, 8. Functional group interconversions and structural problems using chemical reactions.	06 L
10	MAR- '23	Reagents in Organic Synthesis Reagents-Preparation and Applications of following reagents Reducing Reagents: Lithium aluminium hydride LiAlH ₄ , NaBH ₄ , DIBAL-H, LitBuO) AlH ₃ & Raney Nickel Oxidizing Reagent 1. DMSO either with DCC or Ac ₂ O, Dess Martin reagent, Osmium tetroxide. Selenium	10 L
11	APRIL- '23	Natural Products Terpenoids: Introduction, Isolation, Classification. Citral structure determination using chemical and spectral methods Synthesis of Citral by Barbier and Bouveault Synthesis Alkaloids Introduction, extraction, Purification, Some examples of alkaloids and their natural resources Ephedrine-structure determination using chemical methods Synthesis of Ephedrine by Nagal.	08 L



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