

**Satyaniiketan'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 2021-2022****( Frist Term )- SEMESTER-V**

| <b>Sr.No.</b> | <b>MONTH</b>     | <b>TOPIC</b>   | <b>LECTURE</b>   |
|---------------|------------------|--|------------------|
| <b>1</b>      | <b>JUNE- '21</b> | <b>Introduction to Molecular Logic of Life</b><br>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<br><b>Carbohydrates</b><br>Introduction, classification of carbohydrates, their structures and biological significance. Concept of anomers, epimers  | 03 L<br><br>02 L |
| <b>2</b>      | <b>JULY- '21</b> | Reducing and non-reducing sugars, mutarotation, inversion. Reactions of glucose with acid, base, phenyl hydrazine, oxidizing agents, reducing agents and its significance, Glycosidic bonds.<br><b>Lipids</b><br>Introduction, classification of lipids, their structures and biological significance. Reactions of Lipids-Saponification Hydrolysis, emulsification, oxidation  | 05 L<br><br>03 L |
| <b>3</b>      | <b>AUG- '21</b>  | Concept of saponification number, acid number, iodine number and their significance. Rancidity. Types of Lipoproteins and their significance. Blood group substances.<br><b>Amino acids and Proteins</b><br>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. | 03 L<br><br>06 L |
| <b>4</b>      | <b>SEPT- '21</b> |  | 02 L<br><br>06 L |
| <b>5</b>      | <b>OCT- '21</b>  | <b>Hormones</b><br>Introduction to endocrine glands and their hormones. Biochemical nature of hormones, Mechanism of action of lipophilic and hydrophilic hormones.  | 06 L             |
| <b>6</b>      | <b>NOV- '21</b>  | <b>Holiday</b><br><b>(SEMESTER – VI)</b>   |                  |
| <b>7</b>      | <b>DEC- '21</b>  | <b>Retrosynthetic Analysis and Application</b>   | 06 L             |

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|           |                   | 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.  |      |
| <b>8</b>  | <b>JAN- '22</b>   | <b>Organic Reaction Mechanism and Synthetic Applications</b><br>1. Chemistry of reactive intermediates (carbocations, carbanions, free radicals, carbenes, nitrenes, benzyne etc...)<br>2. Wolff rearrangement (Step up).<br>3. Hofmann rearrangement (Step down).<br>4. Simmons-Smith reaction   | 06 L |
| <b>9</b>  | <b>FEB- '22</b>   | 5. Michael reaction,<br>6. Wittig reaction and McMurry reaction,<br>7. Diels-Alder reaction,<br>8. Functional group interconversions and structural problems using chemical reactions.  | 06 L |
| <b>10</b> | <b>MAR- '22</b>   | <b>Reagents in Organic Synthesis</b><br>Reagents-Preparation and Applications of following reagents Reducing Reagents: Lithium aluminium hydride (LiAlH <sub>4</sub> ), NaBH <sub>4</sub> , DIBAL-H, LiAlEt <sub>4</sub> OH, AlH <sub>3</sub> & Raney Nickel<br>Oxidizing Reagent 1. DMSO either with DCC or Ac <sub>2</sub> O, Dess-Martin reagent, Osmium tetroxide. Selenium   | 10 L |
| <b>11</b> | <b>APRIL- '22</b> | <b>Natural Products</b><br>Terpenoids: Introduction, Isolation, Classification. Citral structure determination using chemical and spectral methods<br>Synthesis of Citral by Barbier and Bouveault<br>Synthesis of Alkaloids Introduction, extraction, Purification, Some examples of alkaloids and their natural resources<br>Ephedrine-structure determination using chemical methods<br>Synthesis of Ephedrine by Nagai. | 08 L |

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