Syllabus...

Organic Chemistry –III

TYBSc (CH-608)[2023-2024]

1. RETROSYNTHETIC ANALYSIS AND APPLICATIONS (06 L)

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.

2. ORGANIC REACTION MECHANISM AND SYNTHETIC APPLICATIONS (12 L)

1. Chemistry of Reactive Intermediates (Carbocations, Carbanions, Free Radicals, Carbenes, Nitrenes, Benzynes etc.).

2. Wolff Rearrangement (Step Up).

3. Hoffmann Rearrangement (Step Down).

4. Simmons-Smith Reaction.

5. Michael Reaction.

6. Wittig Reaction and McMurry Reaction.

7. Diels-Alder Reaction.

8. Functional Group Interconversions and Structural Problems using Chemical Reactions.

3. REAGENTS IN ORGANIC SYNTHESIS Reagents: Preparation and applications of following reagents: (10 L)

1. Reducing Reagents: Lithium Aluminium Hydride (LIAlH4),
2. NaBH4, DIBAL-H, Li(tBuO)3AlH and Raney Nickel.
3. Oxidizing Reagents: DMSO either with DCC or Ac2O,
4. Dess-Martin Reagent,
5. Osmium Tetroxide, Selenium Dioxide (SeO2),
6. DDQ.

4. NATURAL PRODUCTS (08 L)

1. Terpenoids : Introduction.
2. Isolation. Classification.
3. Citral - Structure Determination using Chemical and Spectral Methods.
4. Synthesis of Citral by Barbier and Bouveault synthesis.
5. Alkaloids: Introduction.
6. Extraction & Purification.
7. Some examples of Alkaloids and their Natural Resources.
8. Ephedrine - Structure Determination using Chemical Methods.
9. Synthesis of Ephedrine by Nagai.