

# **Syllabus...**

## **Organic Chemistry -III**

### **TYBSc (CH-608)[2021-2022]**

#### **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, Benzyne 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 ( $\text{LiAlH}_4$ ),

2.  $\text{NaBH}_4$ , DIBAL-H,  $\text{Li}(\text{tBuO})_3\text{AlH}$  and Raney Nickel.

3. Oxidizing Reagents: DMSO either with DCC or  $\text{Ac}_2\text{O}$ ,

4. Dess-Martin Reagent,

5. Osmium Tetroxide, Selenium Dioxide ( $\text{SeO}_2$ ),

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.