

20CY213 ORGANIC CHEMISTRY LAB - 2

Hours Per Week :

L	T	P	C
-	-	4	2

COURSE DESCRIPTION

The main objective of this course is to develop knowledge on synthetic techniques of organic chemistry lab, which covers single step, multistep reactions and also asymmetric synthesis. Students are able to apply this knowledge in synthesis, purification and characterization of various organic compounds including stereoisomers.

COURSE OUTCOMES:

Upon completion of the course, the student will be able to achieve the following outcomes

COs	Course Outcomes
1.	Understand the basics synthetic techniques of organic chemistry lab by single step reactions.
2.	Apply the knowledge of synthetic techniques for preparation of various organic compounds in multistep reactions.
3.	Apply the knowledge of reaction mechanism in synthesizing different stereoisomers and analyze the importance of stereochemistry in synthesis of drugs.
4.	Propose a method for separation of racemic mixture and analyze optical purity of compounds.
5.	Characterize various organic compounds by different analytical techniques like UV, IR, HPLC, H ¹ -NMR.

A. Single Step Synthesis

1. Wittig Reaction of Benzyl bromide and anthraldehyde
2. Preparation of Indole-3-aldehyde
3. Diels Alder Reaction of cyclopentadiene and maleic anhydride.
4. Preparation of 1,2,3,4-tetrahydrocarbazole
5. Photoreduction of benzophenone to Benzopinacol
6. Pinacol to Pinacolone Rearrangement
7. Condensation of Benzaldehyde and Acetone

B. Multi Step Synthesis:

1. Borneol to Camphor (Oxidation)
2. Camphor to Isoborneol (Reduction)

C. Asymmetric Synthesis

1. Synthesis of α -nitrostyrene.
2. Michael Addition of Cyclohexanone and α -nitrostyrene using *L*-proline

D. Resolution of Racemic Organic Compounds : BINOL/BINAM**E. Characterization of the synthesized compounds using different analytical techniques (UV, IR, HPLC, $^1\text{H-NMR}$).****Text Book:**

1. A.I. Vogel, Textbook of Practical Organic Chemistry, 5th edition.