

ORGANIC CHEMISTRY (BS-ADP 5th Semester)

Module Code:	Chem-307
Module title:	Fundamental Concepts
Name of Scheme:	BS-ADP 5th Semester
Department:	School of Chemistry
Faculty:	Science
Module Type:	Compulsory
Module Rating:	2 Credits

OBJECTIVES

To develop understanding of the rules and basic principles working behind different properties and reactions of organic molecules. To gain knowledge about systematic naming of different types of organic compounds.

SYLLABUS OUTLINES

1. Basic Concepts

Electronic (Inductive and resonance) effects, steric and solvent effects, hyper-conjugation, hydrogen bonding, tautomerism, strength of acids and bases (pKa and Ka values), Influence of all these phenomena on the strength of acids and bases, aromaticity along with non- and anti-aromaticity.

2. Stereochemistry

Rotation around a single bond and the concept of conformational analysis in ethane, propane, butane, pentane, cyclo-pentane, cyclo-hexane, and cis/trans decalin system. Optical isomerism up to three chiral carbon atoms, enantiomers and diastereomers, racemates, racemization and resolution of racemates, epimerization, stereoisomerism of cyclic diphenyls.

Cis/Trans nomenclature, Z and E conventions, determination of configuration, geometrical isomerism in open chain and cyclic compounds, R/S system of nomenclature for isomers with more than one asymmetric carbon, Optical activity

RECOMMENDED BOOKS:

1. Organic Chemistry, (4th - 7th Ed) by Paula Yurkanis Bruice, Pearson Education (Singapore) Pvt. Ltd. 2004-2015.
2. Organic Chemistry, Vol. I (6th Ed.) and II (5th Ed.) by I.L. Finar, Pearson Education (Singapore) Pvt. Ltd. 2008.
3. March's Advance Organic Chemistry: Reactions, Mechanisms and Structures. (6th Ed.) by M.B. Smith and J. March, Wiley, 2007.
4. A Text-Book of Organic Chemistry by M. Younas, ILMI, Pakistan.
5. Organic Chemistry, (5th Ed.) by S.H. Pine, McGraw Hill, New York, USA, 1987.
6. Organic Chemistry, (6th Ed.) by Francis A. Carey, McGraw Hill, USA, 2005.
7. Organic Chemistry, (6th Ed.) by R.T. Morrison, R.N. Boyd and r.K. Boyd, Benjamin Cummings, 1992.
8. Modern Synthetic Reactions, (2nd Ed.) by H.O. House, W.A. Benjamin Inc., Menlo Park, CA.
9. Principals in Organic Synthesis, by R.O.C. Norman and M.J. Coxon, Chapman and Hall, 1993.
10. Organic Chemistry, by Jonathan Clayden, Nick Greeves and Stuart Warren, Oxford University Press, 2000.