

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**B.E. SEMESTER: 3**  
**ENVIRONMENTAL SCIENCE & TECHNOLOGY**

**Subject name : ORGANIC CHEMISTRY FOR TECHNOLOGISTS - I**

<b>Sr. No.</b>	<b>Course contents</b>
<b>01.</b>	Electronic theory: Types of bonds & bond fission process, resonance effect & hyperconjugation, tautomerism. Reaction intermediates: generation, structure & some reactions such as carbocations, carbanions, free radicals & carbenes, electrophile & nucleophile.
<b>02.</b>	IUPAC nomenclature of different Organic polyfunctional compounds
<b>03.</b>	Stereochemistry: Classification of stereomers, diastereomers, separation of enantiomers, absolute configuration (R/S, E/Z), projection formula, elements of symmetry, stereochemistry of compounds containing two asymmetric carbon atoms. Conformation: conformation around C-C bond in acyclic compounds, structure of cycloalkanes. Geometrical isomerism, Stereoselective & Stereo specific reactions.
<b>04.</b>	Alkanes, Alkenes, Alkynes & Haloalkanes : Methods of preparation, properties & uses.
<b>05.</b>	Alcohols, Thiols, Ethers & Thioethers: Methods of preparation, properties & uses.
<b>06.</b>	Aldehydes & Ketones, , Carboxylic acids & Amines: Methods of preparation, properties & uses.
<b>07.</b>	Name reactions in Organic chemistry :  i. Hoffman reaction ii. Grignard reaction iii. Diazotization reaction iv. Hydrogenation reaction v. Ozonolysis vi. Aldol & Cross aldol reaction vii. Cannizzaro reaction

## Reference Books:

- 1) Organic Chemistry, J. McMurry, Brooks / Cole, 5<sup>th</sup> Ed., 1999
- 2) Organic Chemistry, T. W. Solomons & C. B. Fryhle, John Wiley & Sons., 7<sup>th</sup> Ed., 2000
- 3) Organic Chemistry, G. Marc Loudon, Oxford University Press, 4<sup>th</sup> Ed., 2002
- 4) Organic Chemistry, L. G. Wade Jr., Pearson Education, 5<sup>th</sup> Ed., 2003
- 5) Organic Chemistry, Volumes I & II, I L Finar, ELBS & Longman Ltd., 5<sup>th</sup> Ed., 1996
- 6) Industrial Aromatic Chemistry: Raw materials, processes, products, H. G. Franck & J. W. Stadelhofer, Berlin Springer Verlag, 1<sup>st</sup> Ed., 1988
- 7) Stereochemistry of Carbon Compounds, E. L. Eliel, McGraw – Hill, 1<sup>st</sup> Ed, 2003.
- 8) Stereochemistry: Conformation & Mechanism, P. S. Kalsi, New Age International (P) Ltd., 6<sup>th</sup> Ed., 2005
- 9) Stereochemistry & Mechanism through solved problems, P. S. Kalsi, New Age International (P) Ltd., 3<sup>rd</sup> Ed, 2007
- 10) Organic Chemistry, Morrison & Boyd, Pearson, 7<sup>th</sup> Ed, 2011
- 11) Name reactions & Reagents in Organic synthesis, B.P. Mundy, M.G. Ellerd and F G Favaloro, John Wiley and Sons, 2005
- 12) Organic Building Blocks of the Chemical Industry, H H Szmant, John Wiley and Sons, 1989

**APPROPRIATE NUMBER OF PRACTICALS WILL BE CONDUCTED AS  
PER THE THEORY SYLLABUS**