SARDAR PATEL UNIVERSITY
Programme: B.Sc (Chemistry)
Semester: III
Syllabus with effect from: JUNE 2012

Paper Code: US03CCHE01	Total Credit: 3
Title Of Paper: Organic Chemistry	

Unit	Description in detail	Weighting (%)
I	**Stereochemistry** Stereochemistry and stereoisomerism, Optical activity, Plane-polarized light, the polarimeter, Specific rotation, Production of Enantiomerism, Chirality, the chiral centre, enantiomers, the racemic modification, Configuration, Specification of configuration: R and S, Sequence rules, Diastereomers, Meso structures, Specification of configuration : More than one chiral center, Generation of a chiral center, Synthesis and optical activity, Reaction of chiral molecules: Bond-breaking, Reaction of chiral molecules: Generation of second chiral center, Reaction of chiral molecules with optically active reagent. Resolution, Reaction of chiral molecules*:* Mechanism of free radical chlorination. Free rotation about C-C single bond. Conformation. Torsional strain Conformation of n-butane Vander Waals repulsion, Factors affecting stability of conformation, Conformation of cycloalkanes, Equatorial and axial bond in cyclohexane, Stereoisomerism of cyclic compounds: Cis- and trans- isomers, Stereoisomerism of cyclic compounds. Conformational analysis. **Basic Text & Reference Books :-** ➢ Organic chemistry by Morrison and Boyd, 6th ed.	
II	**Alcohols, Ethers And Epoxides** Structure of alcohols, Classification of alcohols, Nomenclature of alcohols, Physical properties of alcohols, Addition of Grignard reagent, Product of the Grignard synthesis, planning a Grignard synthesis, Synthesis using alcohol, Limitation of Grignard synthesis, Reaction of alcohols, Alcohols as acids and bases, Oxidation of alcohols, Analysis of 1, 2-diols: Periodic acid oxidation. **Polyhydric Alcohols: Ethylene Glycol** Preparation, Reaction and uses Pinacol rearrangement. Method of preparation of glycerol: from Propene and other alternate methods, Chemical reactions: reaction with sodium, PCl_5, carboxylic acid, HCl, HNO_3, HI, Oxalic acids, acetyl chlorides, oxidation & uses. **Ethers And Epoxide** Preparation of ethers. Williamson synthesis, Epoxide. Structure and preparation, Acid-catalyzed cleavage of epoxide, Based catalyzed cleavage of epoxide, **Basic Text & Reference Books :-** ➢ A text book of organic chemistry by Arun Bahl and B. S. Bahl, 16th ed. ➢ Organic chemistry by Morrison and Boyd, 6th ed.	
III	**Aldehydes And Ketones** Structure, Nomenclature, Preparation of ketones by use of organocopper	

	compounds, Reaction. Nucleophilic addition, Oxidation, Reduction, Addition of cyanide, Addition of derivatives of ammonia, Addition of alcohols. Acetal formation, Iodoform test, Acidity of α–hydrogens, Reactions involving carbanions, Base-promoted halogenation of ketones, Acid-catalized halogenation of ketones: Enolization, Aldol condensation, Dehydration of aldol products, Use of aldol condensation in synthesis, Crossed aldol condensation, Alkylation of carbonyl compounds via enamines, Claisen condensation: Formation of β-keto ester. **Amines** Structure, Classification, Nomenclature, Ammonolysis of halides, Reductive amination, Hofmann rearrangement: Migration to electron-deficient nitrogen, Reaction (alkylation), Structure and basicity, Effect of substitution on basicity of aromatic amines, Hoffmann elimination, Reactions of amines with nitrous acid, Synthesis of carboxylic acids, Synthesis using diazonium salt, Hinsberg test. **Basic Text & Reference Books :-** ➢ Organic chemistry by Morrison and Boyd, 6th ed.	
IV	**Carboxylic Acids And Derivatives** Structure,Nomenclature, Physical properties, Grignard synthesis, Nitrile synthesis, Acidity of carboxylic acids, Effect of substituents on acidity, Conversion into acid chlorides, Conversion into esters, Conversion into amides, Halogenation of aliphatic acids. Substituted acids, Nucleophilic acyl substitution. Role of carbonyl group, Nucleophilic substitution. Alkyl Vs. Acyl, Alkaline hydrolysis of esters, Acidic hydrolysis of esters, Transesterification, Malonic ester synthesis of carboxylic acid, Aceto acetic ester synthesis of ketones, Reformatsky reaction: Preparation of β–hydroxy ester. **Phenols** Structure and nomenclature, Physical properties, Industrial sources, Rearrangement of hydroperoxides, Rearrangement of hydroperoxides. Migratory aptitude, Acidity of phenols, Ester formation, Kolbe reaction. Synthesis of phenolic acids, Reimer-Tiemann reaction, Mechanism of Fries rearrangement, Gatterman synthesis. **Basic Text & Reference Books:-** ➢ Organic chemistry by Morrison and Boyd, 6th ed. ➢ Organic reaction mechanism by R.K.Bansal, 3rd ed. ➢ Organic chemistry by S.M.Mukherji, S.P.Singh and R.P.Kapoor. Vol. II.	