

SARDAR PATEL UNIVERSITY
Programme: B.Sc
Semester: II
Syllabus with effect from: November-2011

Paper Code: US02CCHE01	Total Credit: 2
Title of Paper: Organic Chemistry	

Unit	Description in detail	Weightage (%)
I	Alkanes and Cycloalkanes: Introduction, Preparation of Alkanes, The Grignard reagent: An organometallic compound, Coupling of alkyl halides with organometallic compounds, Mechanism of halogenations, Orientation of halogenations, Stability of free-radicals, Nomenclature of selected bicyclic and tricyclic systems, Reactions, reactions of small ring compounds, Baeyer strain theory, Heat of combustion & relative stabilities of cycloalkanes, Orbital picture of angle strain.	25%
II	Alkene and Alkyne: Dehydrohalogenation of alkyl halide, The E2 mechanism, Evidence for the E2 mechanism Evidence for the E2 mechanism. Absence of hydrogen exchange, Evidence for the E2 mechanism. The element effect, The E1 mechanism, Heat of hydrogenation & Stability of alkene, Electrophilic addition; Mechanism Electrophilic addition; Orientation & reactivity, Mechanism of addition of halogen Halohydrin formation, Addition of alkene; Dimerization, Addition of alkane; Alkylation Oxymercuration-demercuration, Hydroboration - oxidation, Free-radical addition. Mechanism of peroxide-initiated addition of HBr, Orientation of Free-radical addition, Hydroxylation Ozonolysis, Preparation of alkynes, Hydration of alkynes. Tautomerism Acidity of alkynes, Reaction of metal acetylides, Analysis of alkynes.	25%
III	Alkyl and Aryl Halides: Homolytic and Heterolytic chemistry, Classification, Preparation, Reaction: Nucleophilic aliphatic substitution, SN2 Reaction: Mechanism & kinetics, SN2 Reaction: Reactivity & steric hindrance, SN1 Reaction: Mechanism & kinetics, Carbocation, Structure of carbocation, Relative stability of carbocations, Stability of carbocations, Stability of carbocation: polar effect, Rearrangement of carbocation, SN2 Vs SN1, Reaction, Low reactivity aryl and vinyl halides, Structure of aryl and vinyl halides, Nucleophilic aromatic substitution, Bimolecular displacement for nucleophilic aromatic substitution, Reactivity in nucleophilic aromatic substitution, Orientation in nucleophilic aromatic substitution, Electron withdrawal by resonance, Elimination-Addition mechanism, Benzyne, Problems.	25%
IV	Benzene and their Derivatives: Aromatic character. The Huckel [4n+2] rule, Effect of substituent group. Determination of relative reactivity, Classification of substituent group, Mechanism of nitration, Mechanism of sulphonation, Mechanism of Friedel - Craft alkylation, Preparation of ketones by Friedel-Craft acylation, Mechanism of halogenations, Reactivity and Orientation, Theory of reactivity, Theory of orientation, Electron release via resonance, Effect of halogen on electrophilic substitution Aromatic-Aliphatic hydrocarbon, Structure & Nomenclature of arenes & their derivatives, Preparation of alkyl benzenes, Limitation of Friedel-Craft alkylation, Reaction of alkylbenzene, Oxidation of alkylbenzenes, Halogenation of alkylbenzene: ring v/s side-chain, Side-chain halogenation	



	of alkylbenzene, Preparation of alkenylbenzenes, Reactions of alkenylbenzenes.	
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Basic Text & Reference Books:

- Organic Chemistry by Morrison & Boyd 6th Edition.
- Organic Chemistry by Paula Yurkanis Bruice, Pearson Education Asia.

