

Sangola Taluka Shetkari shikshan Prasarak Mandal's

VIDNYAN MAHAVIDYALA, SANGOLA

(Teaching Plan)

Department Of Chemistry

Name of Faculty: **Mr. Adlinge N. P.** (Associate Professor)

Academic Year: **2019 – 20**

Class: **B.Sc. I**

Semesters: **II**

Paper No. : **III**

Paper Name: **Organic chemistry**

Sr.No.	Class	Month	Chapter Details
1	B.Sc. I	December	2. Structure and Bonding (Contact hrs: 05) 2.1 Hybridization: sp^3 , sp^2 and sp w.r.t. methane, ethylene and acetylene respectively. 2.2 Bond length, Bond angle and Bond energy with factors affecting these properties w.r.t. : sp^3 , sp^2 and sp hybridization 2.3 Resonance effect with respect to phenol, and nitrobenzene. 2.4 Hyperconjugation w.r.t. toluene. 2.5 Inductive effect, + I and - I . 2.6 Steric effect w.r.t. mesitoic acid.
2	B.Sc. I	January	1. Fundamentals of organic reaction mechanism (Contact hrs: 05) 1.1 Meaning of reaction mechanism. 1.2 Curved arrow notation, Half headed and double headed arrows. 1.3 Types of bond breaking : Homolytic and Heterolytic. 1.4 Types of reagents : Electrophilic and Nucleophilic. 1.5 Types and sub-types of following organic reactions with definition and at least one example of each. a) Substitution b) Addition c) Elimination d) Rearrangement. (Mechanism is not expected)

			1.6 Reactive Intermediates with examples carbocations, carbanions (formation, structure, stability and reactions are expected). Carbon free radicals, carbenes, arenes, nitrenes (Definition with example only)
3	B.Sc. I	February	<p>3. Cycloalkanes (Contact hrs: 03)</p> <p>3.1 Cycloalkanes - Nomenclature methods of formation (a) Internal Wurtz reaction (b) Distillation of calcium or barium salt of dicarboxylic acid.</p> <p>3.2 Chemical properties of cyclopropane (i) Free radical substitution of chlorine in presence of light. (ii) Action of HBr and conc. H₂SO₄ iii) Catalytic reduction by H₂/Ni</p> <p>6. Aromaticity and Benzene (Contact hrs: 06)</p> <p>6.1 Meaning of the terms - Aromatic, non-aromatic, antiaromatic and psuedoaromatic compounds.</p> <p>6.2 a) Kekule structure of benzene b) Resonance structures of benzene. c) Molecular orbital picture of benzene. d) Representation of benzene ring.</p> <p>6.3 Modern theory of aromaticity. Fundamental Concepts - delocalisation of electrons, coplanarity and Huckel's $(4n + 2) \pi$ rule. Applications of Huckel's rule to naphthalene, pyrrole and pyridine.</p> <p>6.4 Mechanism of electrophilic aromatic substitution in benzene w.r.t. nitration, sulphonation, halogenation and Friedel - Craft's reaction- alkylation and acylation.</p>
4	B.Sc. I	March	<p>4. Alkenes, Dienes and Alkynes (Contact hrs: 06)</p> <p>4.1 Nomenclature of alkenes.</p> <p>4.2 Methods of formation of alkenes with mechanism i) By dehydration of lower alcohols. ii) By dehydrohalogenation of lower alkyl halides.</p> <p>4.3 Chemical reactions of alkenes - Hydrogenation, Electrophilic and free radical additions, Hydroboration, Oxidation, Epoxidation, Ozonolysis, Hydration, Hydroxylation, Oxidation with KMnO₄, Polymerisation of alkenes - ethylene and propylene</p> <p>4.4 Nomenclature and classification of dienes.</p> <p>4.5 Isolated, Conjugated and cumulated dienes.</p> <p>4.6 Butadiene-Methods of formation, polymerisation, 1:2 and 1:4 additions and Diels-Alder reaction.</p> <p>4.7 Alkynes - Nomenclature, Acidity of alkynes.</p> <p>4.8 Electrophilic and Nucleophilic addition reactions, Hydroboration, oxidation.</p>

			<p>5. Stereochemistry of organic compounds (Contact hrs: 05)</p> <p>5.1 Types of stereo-isomerism - Optical isomerism, Geometrical isomerism and Conformational isomerism.</p> <p>5.2 Chiral center [Explanation with lactic acid]</p> <p>5.3 Elements of symmetry</p> <p>5.4 Optical isomerism in lactic acid, tartaric acid and 2,3 - dihydroxy butanic acid</p> <p>5.5 Enantiomers and diastereoisomers.</p> <p>5.6 Racemic modification.</p> <p>5.7 Geometrical isomerism-cause of geometrical isomerism.</p> <p>5.8 Geometrical isomerism w.r.t. $C = C$ Geometrical isomerism in maleic acid and fumaric acid.</p>
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