As Per New Syllabus (NEP 1.0)

Shivaji University, Kolhapur

B.Sc. Part-III : Semester-VI

ORGANIC CHEMISTRY

CHEMISTRY (DSE-F6) : PAPER-XIV

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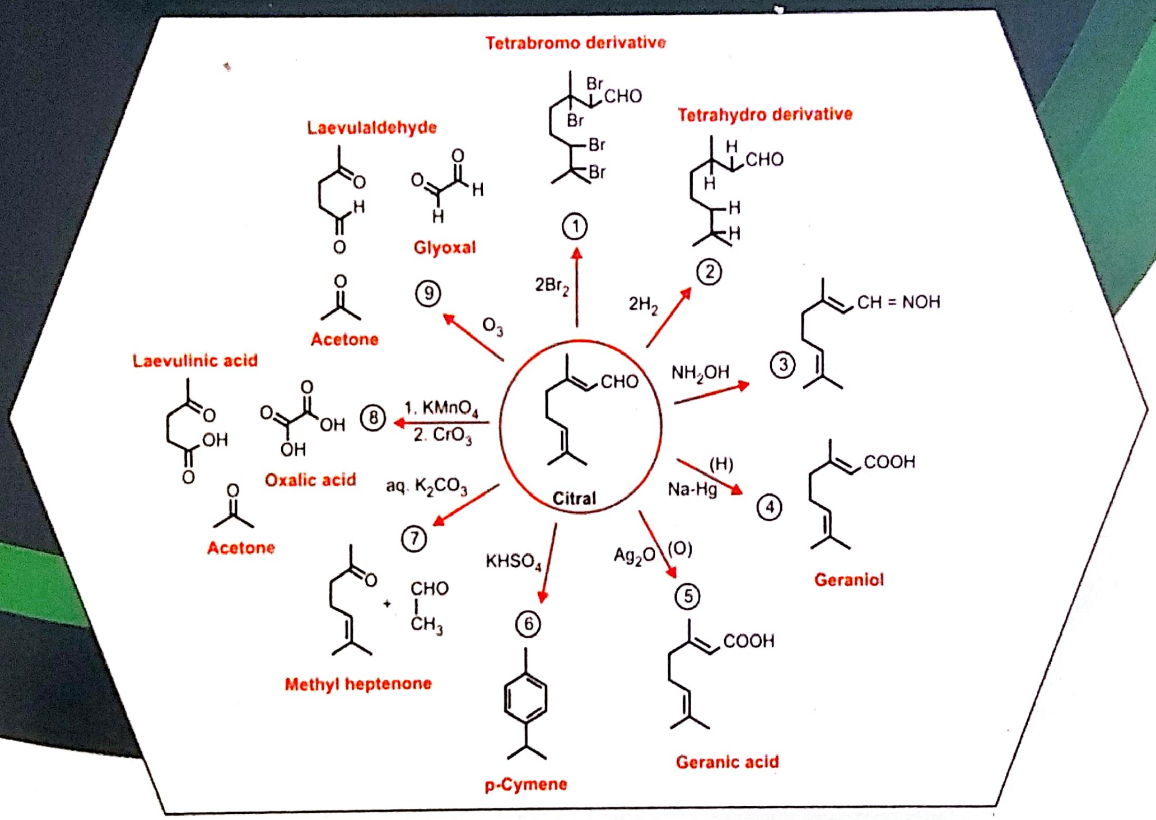

NIRALI PRAKASHAN

ADVANCEMENT OF KNOWLEDGE

Syllabus

B.Sc. Part III (NEP-1.0) SEMESTER-VI
Paper No. DSE-F6 Chemistry Paper No. XIV
(Organic Chemistry)
(Theory Credits : 02, 30 Hours, 38 Lectures)

Unit 1 - Reagents and Reactions in Organic Synthesis [08]

[A] Reagents

Preparation and applications of following reagents :

(A) Oxidizing reagents:

(a) Osmium tetraoxide, (b) Selenium dioxide (SeO_2)

(B) Reducing reagents:

(a) Lithium Aluminium Hydride ($LiAlH_4$), (b) Raney nickel

[B] Name Reactions

Statement, General reaction, Mechanism and Synthetic applications of following reactions :

1. Diels - Alder reaction.
2. Meerwein - Pondorff-Verley reduction.
3. Hoffmann rearrangement.
4. Wittig reaction.
5. Wagner-Meerwein rearrangement.
6. Baeyer-Villiger oxidation.

Unit 2 - Retrosynthesis [05]

2.1 Introduction.

2.2 Recapitulation of basics of reaction mechanism and reagents.

2.3 Terms used - Target molecule (TM), Disconnection, Synthons, Synthetic equivalence, Functional group interconversion (FGI), One group disconnection (w.r.t. suitable examples).

2.4 Retrosynthetic analysis and synthesis of target molecules : Cinnamaldehyde, Cyclohexene, Paramethoxy acetophenone, Methyl-3-phenyl propionate, α,α-dimethyl benzyl alcohol, Paracetamol.

Unit 3 - Electrophilic Addition to >C=C< Bond and −C≡C− Bond [06]

[A] Addition to Carbon-Carbon double (>C=C<) bond :

3.1 Introduction.

3.2 Examples of addition reactions.

3.3 Mechanism of electrophilic addition to >C=C< bo orientation and reactivity,
(i) Hydrohalogenation.
(ii) Anti-Markovnikov's addition (Peroxide effect).
(iii) Rearrangements (Support for formation carbocation).
(iv) Addition of halogens.
(v) Addition of water.
(vi) Addition of hypohalous acids (HOX).
(vii) Hydroxylation (Formation of 1, 2-diols).
(viii) Hydroboration-Oxidation (Formation of alcohol).
(ix) Hydrogenation (Formation of alkane).
(x) Ozonolysis (Formation of aldehydes and ketones).

[B] Addition to Carbon-Carbon triple (−C≡C−) bond :

3.4 Introduction.
3.5 Examples of addition reactions.
3.6 Mechanism of electrophilic addition to −C≡C−bond.
(i) Addition of halogens.
(ii) Addition of halogen acids.
(iii) Addition of hydrogen.
(iv) Addition of water.
(v) Formation of metal acetylides.

Unit 4 - Natural Products **[0**

[A] Terpenoids :

4.1 Introduction, Occurrence, Isolation, General characteristic Classification.
4.2 General methods for structure determination.
4.3 Isoprene rule.
4.4 Analytical evidences and synthesis of Citral.

[B] Alkaloids :

4.5 Introduction, Occurrence, Isolation, Classification, Properties
4.6 General methods for structure determination.
4.7 Analytical evidences and synthesis of Nicotine.

Unit 5 - Pharmaceuticals **[05**

5.1 Introduction.
5.2 Classification.
5.3 Qualities of ideal drug.
5.4 Synthesis and uses of Ethambutal, Phenobarbitone Isoniazide, Benzocaine, Chloramphenicol, Paludrine.
5.5 Drug action of sulpha drugs.

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