

VEER NARMAD SOUTH GUJARAT UNIVERSITY
M.Sc. Semester-IV (ORGANIC CHEMISTRY)
SYLLABUS TO BE EFFECTIVE FROM JUNE 2019

PAPER-I (Advance Organic Chemistry)

Max. Marks: 100 (External - 70 + Internal - 30) Total
Periods:45

UNIT-I NAME REACTIONS **(12 Periods)**

General nature, method, mechanism and synthetic applications of the following reactions;

- (1)Ugi reaction
- (2)Noyori reaction
- (3)Wittig reaction
- (4)Peterson olefination reaction
- (5)Mannich reaction
- (6)Stille reaction
- (7)Ene reaction
- (8)Staudinger reaction
- (9)Corey-Fuchs reaction
- (10)Ritter reaction
- (11)McMurry reaction
- (12)Michael addition

UNIT-II OXIDATION **(11 Periods)**

Introduction, Oxidation with Cr(VI), Mn(VII), Mn(IV), OsO₄, Periodic acid. Peroxy acid. Oxidation of hydrocarbons-alkenes, aromatic rings, saturated C-H group (activated and unactivated), aldehyde and ketones

UNIT-III REDUCTION **(11 Periods)**

Introduction, different reductive processes, hydrocarbons-alkenes, alkynes and aromatic rings, Carbonyl compounds- aldehydes, ketones, (LiAlH₄, NaBH₄ only for aldehyde and ketone) acids and their derivatives, epoxides, nitro, nitroso, azo and oxime groups, Birch reduction, Shapiro reduction.

UNIT-IV MOLECULAR REARRANGEMENTS **(11Periods)**

(A)Rearrangement involving migration to electron deficient carbon:

- (i) Expansion and contraction of rings/Demajnov rearrangement
- (ii) Benzil-benzilic acid rearrangement

(B)Rearrangement involving migration to electron rich carbon:

- (i) Favorskii rearrangement
- (ii) Sommelet-Hauser rearrangement
- (iii) Neber rearrangement

(C)Rearrangement involving migration to electron deficient nitrogen:

- (i) Schmidt rearrangement
- (ii) Curtius rearrangement

(D)Aromatic rearrangements:

- (i) Migration around the aromatic nucleus: Jacobsen rearrangement
- (ii) Migration of group from the side chain to the nucleus: Orton rearrangement, Hoffmann-Martius rearrangement, Rearrangement of N-nitrosoanilines (Fischer-Hepp rearrangement).

(E) Rearrangement involving migration from oxygen to ring:

- (i) Fries rearrangement
- (ii) Claisen rearrangement

Reference Books Recommended:

1. Organic synthesis using transition metals-Roderick Bates (Wiley)
2. Organic chemistry – J. Clayden, N. Greeves, S. Warren and P. Wothers (Oxford Press)
3. Some modern methods of organic synthesis – W. Carruthers (Cambridge)
4. Organic synthesis – Michael B. Smith
5. Advanced organic chemistry, Part B – F. A Carey and R. J. Sundberg, 5th edition (2007)
6. Guidebook to organic synthesis-R K Meckie, D M Smith and R A Atken
7. Organic synthesis- Robert E Ireland
8. Strategic Applications of named reactions in organic synthesis-Laszlo Kurti and Barbara Czako
9. Organic Synthesis, Jagdamba Singh & L.D.S. Yadav, 6th edition, Pragati Prakashan (2010).
10. Reaction Mechanism in Organic Chemistry by S. M. Mukherji and S. P. Singh (McMillan India Ltd., 1976)
11. Advance Organic Chemistry, Reaction Mechanism and Structure by Jerry March, 4th ed. John Wiley & Sons, 1992