VEER NARMAD SOUTH GUJARAT UNIVERSITY M.Sc.-I (CHEMISTRY)
PROPOSED SYLLABUS TO BE EFFECTIVE FROM JUNE 2018
PAPER-II (Organic Chemistry)

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

SEMESTER-II

UNIT-I: Organic Name Reactions **12 Periods**

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

(i) Heck reaction

(ii) Dakin reaction

(iii) Darzen'sglycidic ester synthesis

(iv) Suzuki reaction

(v) Willgerodt reaction

(vi) Buchwald-Hartwig reaction

(vii) H. V. Z. reaction

(viii) Mitsunobu reaction

(ix) Sonagashira reaction

(x) Dickmann reaction.

UNIT-II: AROMATICITY **11 Periods**

A. Aromaticity and Aromatic character; structure and stability of benzene, Frost circle diagram, concept of aromaticity; Resonance and chemical stabilization; criteria to checkaromatic character-IR, NMR, heat of hydrogenation; Huckel's rule; HMO method

B. Antiaromaticity, homoaromaticity, nonaromaticity; aromaticity in benzanoid compounds: naphthalene, pyrene, acepleialdelene.

C. Aromaticity non-benzenoid compounds: azulene, tropolones, charged rings, annulenes, fullerenes, and mesoionic compounds.

UNIT-III: ORGANIC TRANSFORMATION AND REAGENTS **11 Periods**

I. Sharplessepoxidation

II. Umpolung reagent (1,3-dithiane)

III. Dess martin periodinane

IV. DDQ

V. Tri-n-butyltinhydride $(C_4H_9)_3SnH$

VI. Diisobutyl aluminum hybride (DIDAL-H)

VII. Lithium disoprpyl amide (LDA)

VIII. OZONE

IX. Crown ethers

X. Wilkinson's Catalyst

UNIT-IV: **11 Periods**

PHOTO CHEMISTRY

A. Energy of molecules, photochemical energy, electronic excitation, Jablonski diagram, laws of photochemistry, quantum efficiency.

B. Photochemistry of carbonyl compounds- α- cleavage of acyclic, cyclicand α-β unsaturated cleavage of carbonyl compounds, β- cleavage of, inter and intramolecular hydrogen abstraction, addition to carbon-carbon doublr bond, photo reduction of carbonylcompounds.

C. Photo induce rearrangement of enones, dienones and alkenes. Photochemistry of alkenesand aromatic compounds- isomerization, dimerization and addition reactions.

Reference book:

1. Advanced Organic Chemistry-Reactions, Mechanism and Structure, Jerry March, John Wiley.
2. Reaction Mechanism in Organic Chemistry by S. M. Mukherji and S. P. Singh (McMillan India Ltd., 1976).
3. Organic Chemistry (3/e) by J. B. Hendrickson, Donald J. Crem and George S. Rammond (McGraw-Hill Book Co. & Kogekusha Co. Ltd., 1970).
4. Organic Chemistry (5/e) by Morrison & Boyd (Prentice Hall).
5. Advanced Organic Chemistry by Carey & Sundberg (3rdedition).
6. A Guide Book to Mechanism in Organic Chemistry, Peter Sykes, Longman.
7. Name Reactions by A. R. Parikh &H.A.Parikh
8. Name reaction: A collection of detailed reaction mechanism by Jie Jack Li
9. Reaction Mechanism and Reagents in Organic Chemistry by C. R. Chatwal (Himalaya Publishing House, Bombay, 1987).
10. Organic Chemistry-Reactions and Mechanism by P S Kalsi
11. Advanced Organic Chemistry : Reactions and Mechanisms byM.S. Singh
12. Organic chemistrybyCram, Hammond, Pine and Handrickson
13. Photochemistry and Pericyclic Reactions by Jagdamba Singh
14. Pericyclic reactions: A text book by S. Sankararaman
15. Excited states in Organic Chemistry by J. D. Coyle and J. A. Barltrop
16. March's Advanced Organic Chemistry: Reactions, Mechanisms and Structure by

Michael B. Smith

17. Advanced Organic Chemistry: Part B: Reaction and Synthesis byCarey & Francis
18. Organic Chemistry by Jonathan Clayden