

OET 3.2: CHEMISTRY-IV (Organic Chemistry)

(64 Hours).

UNIT-I

Bonding and Aromaticity:

Hybridization, bond length, bond angle, bond energies, bond polarity and dipole moment aromaticity and Huckels rule-HMO theory, Non-benzenoid aromatics, Annulenes (10-18).

[16 Hours]

UNIT-II

Stereochemistry:

Elements of symmetry, symmetry operations E/Z, R/S nomenclature, Fischer, Sawhorse, Newmann projection, Enantiomers, Diastereomers and Epimers.

Prochirality: Homotopic, enantiotopic, diastereotopic groups.

[16 Hours]

UNIT-III

Organic Reactions:

Reactivity, classification of organic reactions, methods of identification kinetics, non kinetic methods. Isotopic labeling techniques, intermediates, cross over products and product proportions in different types of reactions. Named reactions. Classification, Aldol, Dieckmann, Claisen-Schmidt and similar anion addition reactions.

[16 Hours]

UNIT-IV

Heterocycles and Group Transformations:

Structure, synthesis, reactivity of the following heterocycles and their biologically important derivatives. pyrrole, furan, thiophene, pyridine, pyrimidine, Quinoline, isoquinoline & indole. Organic functional group inter conversions involving substitution, addition, eliminations, oxidation, reductions, esterification and hydrolytic reactions.

[16 Hours]

Books Recommended:

1. Organic Chemistry-P. Y. Bruice, Pearson education pvt. Ltd, New Delhi (2002).
2. Organic Chemistry- S. H. Pine, McGraw Hill, London (1987).
3. Organic Chemistry- R. T. Morrison, R. J. Boyd, Prentice Hall, New Delhi (1994).
4. Organic Chemistry-T. W. Graham Solman 4th edn, John Wiley & Sons (1988).
5. Organic Chemistry- Vol. I & II, I. L. Finar, 6th Edn. ELBS, London (2004).
6. Organic Chemistry- F. A. Carey, 4th edn, McGraw Hill (2000).
7. Advanced Organic Chemistry Reaction Mechanism and Structure- J. March, 4th edn. Wiley Eastern Ltd. (2004).
8. Stereochemistry- Conformation and Mechanism, P. S. Kalsi, Wiley-Eastern Ltd., New Delhi (1992).
9. Heterocyclic Chemistry- T. L. Gilchrist, Butterworth, London (1985).
10. Heterocyclic Chemistry- J. A. Joule & G. F. Smith, 2nd edn, Van Nostrand, London (1978).

OEP 3.2: CHEMISTRY PRACTICAL-IV (Organic Chemistry) (64 Hours)

Synthesis and Polarimetry:

1. Benzoic acid and Benzyl alcohol from Benzaldehyde (Cannizaro Reaction).
 2. P-Nitroaniline from Acetanilide.
 3. P-Bromoaniline from Acetanilide.
 4. Methyl Orange.
 5. Benzil from Benzaldehyde.
 6. Benzanilide from Benzophenone (Beckman Rearrangement).
 7. Aniline from Benzene.
 8. 2,4-Dinitrophenol from Chlorobenzene.
 9. M-Nitroaniline from Nitrobenzene.
 10. Benzoic acid from Toluene.
- Quantitative estimation of sugar, mixture of sugars and determination of specific rotation of sugars

Books recommended:

1. Laboratory experiments in organic chemistry – Arun sethi, New Age International Ltd. New Delhi (2006).
2. A Hand book of organic chemistry- H. T. Clarke.
3. Vogel's text book of practical organic chemistry, revised 5th edn, Addison Wesley, Longman Ltd, UK (1997).