



Synthesis in Organic Compounds

Course Code	Course Num.	Course Name	Credit Hours	Lec	Lab	Tut	Prerequisites
CHM	326	Synthesis in organic Compounds	2	0	4	0	CHM 325

Objectives:

The participants will become familiar with heterocyclic compounds and their importance in modern organic chemistry - including the synthesis of the most common heterocyclic and their chemical properties.

Syllabus:

Laboratory instructions and The laboratory rules, Common Laboratory Techniques: Filtration, Decolorization, Drying and drying agents, Reflux, Reporting results.

Synthesis of azo dyes: Synthesis Azo dye (Para-red). Dyes play an indispensable role in human life. Dyeing processes are often considered as an important characteristic of a particular civilization or culture.

Synthesis of azo dyes: Synthesis Azo dye (Methyl Red from Anthranilic Acid).

Synthesis of hexahydro-1,3,5-tri-p-tolyl-s-triazine. Hexahydro-1,3,5-tri-p-tolyl-s-triazine can be prepared by the reaction of p-toluidine with formaldehyde at room temperature.

Synthesis of 2,3-diphenylquinoxaline can be prepared by the reaction of benzil with o-phenylenediamine.

Synthesis of 5,5-diphenylhydantoin can be prepared by the reaction of benzil with urea in the presence of a base.

Synthesis of benzimidazole. Benzimidazole can be prepared by the reaction of o-phenylenediamine with formic acid under refluxing.

Synthesis of benzotriazole. Benzotriazole can be prepared by the reaction of o-phenylenediamine with nitrous acid.

Synthesis of 3-methyl-1-phenyl-5-pyrazolone. 3-Methyl-1-phenyl-5-pyrazolone can be prepared by the reaction of ethyl acetoacetate with phenylhydrazine.

Synthesis of barbituric acid. Barbituric acid can be prepared by the reaction of diethylmalonate with urea in the presence of sodium ethoxide.

Estimation of carboxylic acid group. The molar mass of an unknown carboxylic acid will be determined by using the standard NaOH solution.

Estimation of formaldehyde. To estimate the %age of -CHO group in formaldehyde.

Textbook:

Vogel's Textbook of Practical Organic Chemistry (5th Edition) [Hardcover]. A.I. Vogel, A.R. Tatchell, B.S. Furnis, A.J. Hannaford, P.W.G. Smith., Longman Group UK Limited 1989 ISBN 978-0-582-46236-6.

References:

1. Synthesis of Common Aromatic Heterocycles, Published Online: 7 JUL 2011 DOI: 10.1002/9781118093559.
2. Gilchrist, T. L. Heterocyclic chemistry; 3rd ed.; Addison Wesley Longman: Edinburgh Gate, 1997.

