

CH P 518: ORGANIC CHEMISTRY PRACTICALS – III

Course Outcome

- Enable the students to understand and learn the principles of quantitative determinations of different types of organic molecules.
- Learn and identify the concepts of a standard solutions, primary and secondary standards
- Demonstrate the methods of organic preparations using multistep synthetic protocol.
- Learn the isolation and purification of intermediate and final products.
- Learn how to engage in safe laboratory practices by handling laboratory glassware, equipment, and chemical reagents appropriately.
- Understand how to dispose of chemicals in a safe and responsible manner, how to perform common laboratory techniques including reflux, distillation and isolation/separation and purification of organic compounds by various methods.
- Apply the spectroscopic techniques to interpret the structure by analysing the spectral data.

Quantitative Determinations (Any five determinations are to be carried out)

1. Quantitative determination of equivalent weight of acids by titrimetric/silver salt method
2. Quantitative determination of aromatic amines/phenols by bromide-bromate & acetylation methods.
3. Quantitative determination of amino acids by formal titration method
4. Quantitative determination of sugars by Bertrand's/Fehling's solution method.
5. Quantitative determination of acid & ester and acid & amide in the given mixtures.
6. Quantitative determinations of ketones by haloform reaction and oxime method.
7. Quantitative determinations of aldehydes & ketones by using 2,4-dinitrophenyl hydrazine method.
8. Quantitative determinations of hydroxyl, amino, nitro and amide groups.

Multi Step Organic Synthesis (Any five preparations are to be carried out)

1. Preparation of *o*-aminobenzoic acid from phthalic anhydride.
2. Preparation of benzilic acid from benzoin.
3. Preparation of benzanilide from benzophenone via Beckmann rearrangement.
4. Preparation of *p*-aminoazobenzene from aniline through diazoaminobenzene.
5. Preparation of 2,4-dinitrophenylhydrazine from chlorobenzene.
6. Preparation of *m*-nitrobenzoic acid from benzoic acid/methyl benzoate.
7. Preparation of *p*-aminobenzoic acid from *p*-nitrotoluene.
8. Preparation of anthraquinone from phthalic anhydride.
9. Preparation of 4-bromoaniline from acetanilide.
10. Preparation of 4-nitroaniline from acetanilide.
11. Preparation of acetanilide from acetophenone via Beckmann rearrangement.

Separation Techniques (Any two separations are to be carried out)

Separation of components from mixture of organic compounds by fractional crystallization, fractional distillation and steam distillation.

Identification/separation of components from the mixture of organic compounds by Paper, TLC and column chromatography.

Spectroscopic Techniques (Any five spectral problems are to be solved)

Interpretation of structure of organic molecules by the joint application of UV-Vis., IR, NMR and Mass spectra.

Demonstration of recording of UV-Visible, IR, NMR and LC Mass spectra of organic compounds.

References

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