OC P 518: ORGANIC CHEMISTRY PRACTICALS-IV

(Any twelve experiments are to be carried out)

Course Outcome

- Enable the students to learn and identify the concepts of a standard solutions, primary and secondary standards
- Understand and learn the principle of quantitative determinations of different types of organic molecules, such as carboxylic acids, amides, esters, amino acids, sugars, phenols, amines, aldehydes, ketones, acid-ester mixture, amide-ester mixture.
- Know the quantitative determination of functional groups like hydroxyl, vic-hydroxy, enol, amino, amide and nitro groups.
- Study the quantitative determination of unsaturation in unsaturated organic compounds.
- The students will apply the green chemistry protocol for the synthesis of organic compounds.

Quantitative Determinations

1. Determination of equivalent weight of acids by titrimetric method.
2. Quantitative determination of mono/di-carboxylic acids and esters by titrimetric method.
3. Quantitative determination of aromatic amines/phenols by bromide-bromate method.
4. Quantitative determination of aromatic amines/phenols by acetylation method.
5. Quantitative determination of glycine by Sornsen's formal titration method.
6. Quantitative determination of sugars by Bertrand's/Fehling's solution method.
7. Quantitative determination of acid & ester in the given mixtures.
8. Quantitative determination of acid & amide in the given mixtures.
9. Quantitative determination of ketones by haloform reaction method.
10. Quantitative determination of ketones by oxime method.
11. Quantitative determination of aldehydes and ketones by using 2,4-dinitrophenyl hydrazine method.
12. Quantitative determination of hydroxyl and vic-hydroxy groups using different methods.
13. Quantitative determination of amino, nitro and amide groups using different methods.
14. Quantitative determination of unsaturation in organic compounds by various methods.

Green Preparations

1. Green synthesis of acetanilide from aniline and acetic acid.
2. Green synthesis of dihydropyrimidinone by Beginelli method.
3. Synthesis of biodiesel from vegetable oil and determination of pH and freezing point.
4. Preparation of benzoin from benzaldehyde by thiamine catalyzed benzoin condensation.
5. Preparation of benzopinacol from benzophenone by photoreduction method.
6. Alkylation of diethyl malonate with benzyl chloride using microwave.
7. Alkylation of diethyl malonate or ethyl acetoacetate with an alkyl halide using phase transfer catalyst.
8. Synthesis of Luminol from phthalic anhydride and study of chemical luminescence.

Spectroscopic Methods

9. Demonstrations of recording/predicting/downloading the UV, IR, NMR and LC-MS spectra of organic compounds from web sites.
10. Interpretation of structure of organic molecules by the joint application of UV-Vis., IR, NMR and Mass spectra provided by the instructor.
11. Locating an organic compound by reference to literature (Chemical Abstract).
12. Applications of Chem draw and Chem sketch software tools to draw the chemical structures and to write the mechanism of the reactions.

References

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