OC P 517: ORGANIC CHEMISTRY PRACTICALS–III

(Any twelve preparations are to be carried out)

Course Outcome

- Enable the students to demonstrate the methods of organic preparations using multistep synthetic protocol.
- 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.
- Comprehend the applications of different reactions in the preparation of heterocycles.
- Demonstrate skills in the preparation of heterocycles.

Preparation of organic compounds through multistep synthetic protocol

(Report of the yield, melting point, cost per Kg of the product synthesized and the cost from the catalogue).

1. Preparation of *o*-aminobenzoic acid from phthalic anhydride.
2. Preparation benzilic acid from benzoin.
3. Preparations of benzanilide from benzophenone, acetanilide from acetophenone and ε-caprolactam from cyclohexanone *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*-amionobenzoic acid from *p*-nitrotoluene.
8. 3-Bromo-4-methyl benzaldehyde from *p*-Toluidine.
9. Preparation of α-acetylaminocinnamic acid from glycine.
10. Preparation of anthraquinone from phthalicanhydride.
11. Preparation of 4-bromoaniline from acetanilide.
12. Preparation of 4-nitroaniline from acetanilide.
13. Preparation of 2,4-dinitrophenol from chlorobenzene.
14. Preparation of 1,3,5-tibromobenzene from aniline.
15. Preparation of Ethyl resorcinol from Resorcinol.
16. Preparation of 2,5-dihydroxy acetophenone from hydroquinone.
17. Preparation of adipic acid from cyclohexanol*via*cyclohexanone.
18. Preparation of o-hydroxybenzophenone from phenol *via* Fries rearrangement.
19. Preparation of p-chlorobenzoic acid from p-nitrotoluene*via*Sandmeyer reaction.
20. Preparation of m-chloroiodobenzene from m-dinitrobenzene.
21. Preparation of N-methylanthranilic acid from phthalic acid/phthalic anhydride.
22. Preparation of N-bromosuccinimide from Succinic acid/succinic anhydride.
23. Preparation of benzphenacolone from Benzophenone*via* Benzpinacol.
24. Preparation of methyl cinnamate from cinnamic acid using Perkin reaction followed by esterification.
25. Preparation of phenyl cinnamyl ether from cinnamaldehyde through cinnamyl alcohol, cinnamyl bromide followed by nucleophilic substitution reaction with phenol.
26. Preparation of 2,5-dihydroxyacetophenone from hydroquinone
27. Preparation of 2-carbethoxycyclopentanone from adipic acid.

Preparation of Heterocycles

1. Preparation of diethyl 3,5-dimethyl-pyrrole-2,4-dicarboxylate using Knorr pyrrole synthesis.
2. Preparation of 1,2,3,4–tetrahydrocarbazole from cyclohexanone through Fischer indole synthesis.
3. Preparation of 7-hydroxy-4-methyl-coumarin from resorcinol and ethyl acetoacetate *via*Pechmann reaction.
4. Preparation of 2,3-diphenylquinoxaline from benzoin through oxidation and condensation with o-phenylenediamine.
5. Preparation of 9-chloroacridine from o-chlorobenzoic acid and aniline followed by $POCl_3$ cyclization.
6. Preparation of 9-substituted acridine from diphenyl amine and carboxylic acid using $ZnCl_2$.
7. Preparation of 1-phenyl-3-methyl-5-pyrazolone from phenyl hydrazine and ethyl acetoacetate
8. Preparation of 2,5-disubstituted oxazole from acid hydrazide and carboxylic acid.
9. Preparation of 3,5-diaryl-4,5-dihydropyrazole from substituted acetophenones*via* chalcone.
10. Preparation of 4-arylthiazole-2-amine from substituted acetophenones.
11. Preparation of quinoline from aniline.
12. Preparation of 2-phenylindole from acetophenone*via*acetophenone phenyl hydrazone.
13. Preparation of 2,4,6-trimethylquinoline from p-toluidine via 4-(p-tolylamino)pent-3-ene-2-one.
14. Preparation of flavone from o-hydroxyacetophenone via o-benzoyl acetophenone and o-hydroxy-dibenzoylmethane.
15. Preparation of benzimidazole and 2-substituted benzimidazole from o-phenylenediamine.
16. Preparation of 1-amino-5-substituted-1,2,4-triazole-2-thiol from carboxylic acid and thiocarbohydrazide.

References

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