ACHARYA NAGARJUNA UNIVERSITY
DEPARTMENT OF CHEMISTRY

M.Sc. ORGANIC CHEMISTRY :: SEMESTER–III

PRACTICAL–I: MULTISTAGE ORGANIC SYNTHESIS (R22OC35)

(*For the students admitted from the A.Y. 2022-2023 onwards)*

Max. Marks: 100 **(Internal-30M & External-70M)**

(Minimum Five Experiments must be carryout)

Expt-1: Synthesis of paracetomol from benzene

Step 1: Benzene to Nitrobenzene (Nitration)

Step 2: Nitrobenzene to N-phenyl hydroxylamine (reduction)

Step 3: N-phenyl hydroxyl amine to *p*-aminophenol (Rearrangement)

Step 4: *p*-amino phenol to *p*-hydroxy acetanilide/paracetomol(acetylation)

Expt-2: Synthesis of *o*-chlorobenzoic acid from phthalic acid

Step 1: Phthalic acid to phthalic anhydride (Dehydration)

Step 2: Phthalic anhydride –phthalic amide (Amide formation)

Step 3: Phthalmide-Anthranilic acid (Hoffman's Bromamide reaction)

Step 4: Anthranilic acid -*ortho*-chloro benzoic acid

Expt-3: Synthesis of sulpha drug from aniline

Step 1: Aniline to acetanilide

Step 2: Acetanilide to *p*-acetamide benzene sulphonyl chloride (sulphonation)

Step 3: *p*-acetamide benzenesulphonylchloride to *p*-acetamide benzenesulphonamide (s-amination)

Step 4: *p*-acetamide benzene sulphonamide to *p*-amino benzenesulphonamide(hydrolysis)

Expt-4: *m*-Chloro-nitrobenzene from nitrobenzene

Step 1: Nitro benzene to *m*-dinitro benzene (nitration)

Step 2: *m*-dinitrobenzene to *m*-nitro aniline (partial reduction)

Step 3: *m*-nitro aniline to *m*-nitrodiazoniumchloride (diazotization)

Step 4: *m*-nitrodiazoniumchloride to *m*-Chloro-nitrobenzene (sandmayers reaction)

Expt-5: Synthesis of *p*-bromo benzanilide from benzophenone

Step 1: Benzophenone to benzopenone oxime (Addition)

Step 2: Benzophenone oxime to benzanilide (Beckman's rearrangement)

Step 3: Benzanilide to *p*-bromobenzanilide) (bromination)

Expt-6: Synthesis of Methyl orange from aniline

Step 1: Aniline to sulphonic acid (sulphonation)

Step 2: sulphonic acid to Diazonium chloride (diazotization)

Step 3: Diazonium chloride to methyl orange (coupling reaction)

Expt-7: Synthesis of Acridone from Anthranilic acid

Step 1: Anthraninilc acid to o-chlorobenzoic acid (Diazotosation followed by sand mayer's reaction)

Step 2: o-chlorobenzoic acid to N-phenyl anthranilic acid (Substitution)

Step 3: N-phenyl anthranilic acid to acridone (Cyclisation)

Note: All the students must submit the TLC for all the stages of preparation and a photo copy must be pasted in records.

Reference Books:

1) Practical Organic Chemistry A.I.Vogel (Longmans).
2) Text Book of practical organic Chemistry F.G.Mann & B.C. Sanders.
3) A Manual of Practical Organic Chemistry Day Sitaramam & Govindachari.
4) Organic Experiments L.F.Fieser.
5) Practical Organic Chemistry H.T.Openshaw.
6) Systematic Identification of Organic Compounds, P.L.Shriner, R.C.Fuson & D.Y.Curtin.
7) Identification of Organic Compounds N.D.Cheronis & J.B.Entrilkin.
8) Advanced Organic Synthesis by R.S.Monson Academic Press.

Note: For University Practical Examination the Duration is a 9 hours.

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