

**Course: M.Sc. Specialization: ORGANIC CHEMISTRY**

**Practical Syllabus (Semester: III; Batch: 2014-15)**

**PRACTICAL-I: Multistage Organic Synthesis (3 & 4 stage)**

**(Any five experiments must be carryout)      Max. Marks: 70 (60Prac. + 10Rec.)**

**Expt-1:** Synthesis of paracetamol 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/paracetamol(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: Phthamide- 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 benzophenone 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: Anthranilic acid to *o*-chlorobenzoic acid (Diazotisation 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)

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

REFERENCES:

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: Duration: 9 hours**

## **PRACTICAL – II :: Estimations**

**(All experiments must be carryout)**

**Max. Marks: 70 (15 QA+45Prac.+10Rec.)**

**Part I: One theory question either relating to spectral characterization or any practical or as wish by the examiner. 15M**

**Part II: The following Estimations/Isolations 45M**

**Expt. 1:** Estimation of hydroxyl group by acetylation or pthalation method

**Expt. 2:** Estimation of phenol (bromination method)

**Expt. 3:** Estimation of aniline (Bromination method)

**Expt. 4:** Estimation of carbonyl groups (Hydrazone formation method)

**Expt. 5:** Estimation of sugars –glucose and sucrose by using Fehlings solution

**Expt. 6:** Determination of iodine value of oil or fat

**Expt. 7:** Determination of saponification value of oil or fat

**Expt. 8:** Estimation of vitamin ‘C’ in lime juice.

**Expt. 9:** Isolation of caffeine from tea/coffee sample.

**Record:**

**10M**

**For University Practical Examination: Duration: 9 hours**

**Course: M.Sc.; Specialization: ORGANIC CHEMISTRY**

**Practical Syllabus (Semester: IV; Batch: 2014-15)**

**PRACTICAL-I: Analysis of Binary Organic Mixture**

**(Any five experiments must be carryout)      Max. Marks: 70 (15QA+45Prac.+10Rec.)**

**Part I: One theory question either relating to spectral characterization or any practical or as wish by the examiner.      15M**

**Part II: Two component organic mixture analysis**

(The student must be given training in at least eight mixtures with different functional groups)

[Note: For University examinations the student has to submit at least two derivatives for each individual component].

**NOTE: For University Practical Examination: Duration: 9 hours.**

**Course: M.Sc.; Specialization: ORGANIC CHEMISTRY**

**Practical Syllabus (Semester: IV; Batch: 2014-15)**

**PRACTICAL-II: Project Work/Home Paper**

**Max. Marks: 100**

**Project Work / Internship is compulsory for the University students.**

**Selection of Home Paper/Project Work is optional for affiliated college students.**

- **The students opted for Home Paper must be assigned a latest topic and the students have to submit a dissertation (50-60 pages) covering all the latest literature on the topic assigned. The candidate will be assessed at the time of the conduct of final practical examination of the semester taking into consideration of dissertation and viva-voce on the topic chosen for home paper.**