M.Sc. (FINAL) CHEMISTRY, 2008-2009

PRACTICALS, GROUP-B

Duration: 18 Hrs. (spread over three days) **M.M. 200**

Distribution of Marks

1.	Mixture	50 Marks
2.	Estimation	30 Marks
3.	Preparation (Synthesis/Natural Sources)	25 Marks
4.	Spectrophotometric estimation/ Spectral analysis	20 Marks
5.	Seminar	20 Marks
6.	Report on Industrial Tour	15 Marks
7.	Record/ Sessional	20 Marks
8.	Viva-voce	20 Marks
	Total	**200 Marks**

Exercises

1.Qua litative Analysis - Separation, purification and identification of components of a mixture of three organic compounds (three solids or two solids-one liquid), separable by ether, $NaHCO_3$, solution, dil. NaOH, dil. acid and distillation, derivatives of components to be prepared, wherever possible.

2.Q uantitative Analysis - (one experiment to be given in the examination)

(i)T o estimate the percentage of nitrogen in the given organic sample by Kjeldahl's method.

(ii) To estimate a halogen in the given sample by the alkaline reduction method (Modified Stepenow method).

(iii) To estimate the percentage of sulphur in the given organic sample by Messenger's method.

3.Synthesis of organic compounds (one synthesis to be given in the examination). The exercise should illustrate the use of organic reagents and may involve purification of the products by chromatographic technique.

Photochemical reaction -

Benzophenone → Benzpinacol → Benzpinacolone

Backmann rearrangement -

Benzophenone → Benzophenone oxime → Benzanilide → Benzoic acid.

Acetophenone → Acetophenone oxime → Acetanilide → p-Nitroacetanilide or p- bromoacetanilide.

Hoffman and Sandmeyer reaction -

Phtahlic anhydride → Phthalimide → Anthranilic acid → o-Chlorobenzoic acid.

Benzillic acid rearrangement -

Benzoin → Benzil → Benzilic acid

Fisher-Indole synthesis - Preparation of 2-phenylindole or 2-methylindole or 1,2,3,4-tetrahydrocarbazole.

Enzymatic reduction- Reduction of ethyl acetoacetate using Baker's yeast to yield enantiomeric excess of S (+) ethyl-3-hydroxybutanoate and to determine its optical purity

Synthesis using microwaves -

Alkylation of diethyl malonate with benzyl chloride

Synthesis using phase transfer catalyst -

Alkylation of diethyl malonate or ethyl acetoacetate with alkyl halides.

OR

Extraction of organic compounds from natural sources (any one experiment is to be given in the examination).

1. Isolation of caffein from tea leaves
2. Isolation of casein from milk (the students are required to try some typical colour reactions of proteins).
3. Isolation of lactose from milk (purity of sugar should be checked by TLC and PC and R_f value reported).

4. Isolation of nicotine dipicrate from tobacco.
5. Isolation of cinchonine from cinchona bark
6. Isolation of lycopene from tomatoes
7. Isolation of piperine from black pepper.
8. Isolation of β-carotene from carrots
9. Isolation of oleic acid from olive oil (involving the preparation of complex with urea and separation of linoleic acid).
10. Isolation of eugenol from cloves.
11. Isolation of (+) limonine from citrus rinds.

4.S pectrophotometric (UV/VIS) Estimation (any one experiment is to be given in the examination).

- Amino acids
- Proteins
- Carbohydrtates
- Cholesterol
- Ascorbic acid
- Aspirin
- Caffeine

OR

Spectral Analysis