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**B.Sc. DEGREE BRANCH IV-CHEMISTRY
CORE CHEMISTRY MAJOR PRACTICAL-IV
PAPER CODE: -12UCHP04
Internal Assessment Marks:40 External marks :60**

**GRAVIMETRIC ESTIMATIONS and ORGANIC
PRACTICALS**

I. GRAVIMETRIC ESTIMATIONS

1. Estimation of Barium as Barium sulphate
2. Estimation of Barium as Barium chromate
3. Estimation of Lead as Lead chromate
4. Estimation of Calcium as Calcium oxalate monohydrate
5. Estimation of Sulphate as Barium sulphate.

II A. ORGANIC QUALITATIVE ANALYSIS

1. Analysis of organic compounds.
Characterisation of organic compounds by their functional groups and confirmation by preparation of derivative. The following functional groups may be studied.

Aldehydes, Ketones, carboxylic acids, aromatic primary and secondary amines, phenol, aromatic ester, amide, diamide, anilide, nitro compounds and monosaccharides.

b. ORGANIC PREPARATIONS

1. Preparations involving the following :
 - a) Oxidation of benzaldehyde.
 - b) Hydrolysis of Methyl salicylate or ethyl benzoate.
 - c) Nitration - p-nitroacetanilide and m-dinitrobenzene
 - d) Bromination - p-bromoacetanilide and tribromophenol
 - e) Benzoylation — β -naphthylbenzoate
2. Determination of boiling point of liquids.

(Not for Examination 1.a, 1.c, 2)

1. Nitrogen Compounds: (9 h)

Nitro hydrocarbons: Nomenclature and classification – nitro hydrocarbons – structure. Tautomerism of nitroalkanes leading to acid and keto form. Preparation of Nitroalkanes. Reactivity – halogenation, reaction with HONO (Nitrous acid), Nef reaction and Mannich reaction leading to Michael addition and reduction.

Amines (Aliphatic and Aromatic) : Nomenclature, Classification into 1^o, 2^o, 3^o Amines and Quaternary ammonium compounds. Preparative methods – (1). Ammonolysis of alkyl halides (2). Gabriel synthesis (3). Hoffman's bromamide reduction reaction (mechanism). (4). Reduction of Amides and Schmidt reaction. Physical properties and basic character – Comparative basic strength of Ammonia, methyl amine, dimethyl amine, trimethyl amine and aniline - Comparative basic strength of aniline, *N*-methyl aniline and *N,N*-dimethyl aniline (in aqueous and non-aqueous medium), steric effects and substituent effects. Use of amine salts as phase transfer catalysts. Chemical properties : a) Alkylation b) Acylation c) Carbylamine reaction d) Hinsberg separation e) Reaction with Nitrous acid of 1^o, 2^o, 3^o (Aliphatic and aromatic amines). Electrophilic substitutions of Aromatic amines – Bromination and Nitration. Oxidation of aryl and 3^o amines. Diazotization. Cyanides and isocyanides : Nomenclature (aliphatic and aromatic) structure. Preparation of cyanides: a) from Alkyl halides b) from amides c) from aldoximes. Preparation of isocyanides from alkyl halides and amines. Properties of cyanides and isocyanides, a) hydrolysis b) addition of Grignard reagent c) reduction d) oxidation.

2. Heterocyclic Compounds: (5 h)

Introduction and definition: Simple 5 membered ring compounds with one hetero atom Ex. Furan, Thiophene and Pyrrole. Importance of ring system – presence in important natural products like haemoglobin and chlorophyll. Numbering the ring systems as per Greek letter and Numbers. Aromatic character – 6-electron system (four-electrons from two double bonds and a pair of non-bonded electrons from the hetero atom). Tendency to undergo substitution reactions. Resonance structure : Indicating electron surplus carbons and electron deficient hetero atom. Explanation of feebly acidic character of pyrrole, electrophilic substitution at 2 or 5 position, halogenation, nitration and sulphonation under mild conditions. Reactivity of furan as 1,3-diene, Diels Alder reactions (one example). Sulphonation of thiophene, purification of Benzene (obtained from coal tar). Preparation of furan, Pyrrole and thiophene from 1,4-dicarbonyl compounds only. Paul-Knorr synthesis, structure of pyridine, Basicity – Aromaticity – Comparison with pyrrole – one method of preparation and properties – Reactivity towards Nucleophilic substitution reaction – Chichibabin reaction.

3. Carbohydrates: (6 h)

Monosaccharides : All discussion to be confined to (±) glucose as an example of aldo hexoses and D(-) fructose as example of ketohexoses. Chemical properties and structural elucidation: Evidences for straight chain pentahydroxy aldehyde structure (Acetylation, reduction to n-hexane, cyanohydrin formation, reduction of Tollen's and Fehling's

Bsc 3 year chemistry syllabus. Bsc hons chemistry syllabus. Bsc 1st year chemistry syllabus 2020. Bsc 1st year chemistry syllabus. Bsc 1st year chemistry syllabus 2021. Bsc physical science with chemistry syllabus du. Bsc 2nd year chemistry syllabus. Bsc 3rd year chemistry syllabus.

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BSc Chemistry offers a bachelor's program. Finally, you have opportunity study subjects of another department á see list of units course options below. Our innovative skills-based curriculum will provide you with the tools for your graduation success and our award-winning careers service will help you to make choices for your future. Choosing to study chemistry canˆ open the door to an exciting range of career options. A suite of dedicated analytical instrumentation. emphasis ˆ onteaching students how to think about problems, how to develop skills and how to get the most out of the educational resources available. The units Practices are usually evaluated by an experimental report and/or a short written assignment and/or written test.The percentage of independent study awards increases during each study year. It is entirely voluntary and students in the second, third and fourth years help the first years to address problems defined by the contents of the ongoing tutorial. X-ray diffractometers avant-garde. Additional Mathematical Support We offer additional mathematical support to all our students. You will have three Academic Tutors, one for Organic Chemistry, Inorganic and Physics. Assistance for the disabled The counseling and support service for students and applicants offers practical assistance and advice to current students and applicants. Scholarships and Sponsorships For information on scholarships/sponsorship consult our tuition pages and go to Department and University Scholarships Facilities LÁUniversityA Manchester offers an extensive library and Online to help you get the most out of your studies. Email: foss@manchester.ac.uk Foundation year available You can prepare for the complete degree course if you don't have to Appropriate qualifications for direct entry by taking our foundation course first. University students have about 20 hours of contact time per week and should spend about 30 hours in private studio. Your week will consist of: individual research projects computer-based lessons - a range of ancillary mathematics, data management, presentation and IT skills and computer-based chemistry is taught on the dedicated computer cluster. Course Unit for Year 3 The course unit details listed below are subject to change and are the latest example of the curriculum available on this course of study. This is subject to satisfactory academic performance and completion of required prerequisite modules. The first year is a simple / failed step, but since then in a percentage of the evaluation each year counts against the classification of the final degree. Finally, the company encourages students to think about their employability and have worked closely with the Career Service to run events throughout the year, such as a LinkedIn lab. Passage (peer-assisted study sessions) and peer mentoring We are proud of our innovative pass (peer-assisted study sessions) and peer mentoring scheme. A range of study options you can extend your degree within one year to undertake an industrial/study experience of integrated Master's or earning abroad. You can expand your degree by taking units from college and business and management for all programs in exchange for some units from your degree. Course Unit for Year 2 The course unit details listed below are subject to change and are the latest example of the curriculum available on this course of study. The chemistry supporting personalized learning at It offers a high level of support for learning. Our modern teaching laboratories are equipped with a wide range of specialist structures including: cutting-edge synthetic workshops for project work. You will also have access to: a access to research laboratories for Separations, EPR, NMR, and Mass Spectrometry. Classes are usually assessed by a written exam (multiple choice or essay-based), which takes place at the end of an academic semester. Our practical courses are designed to provide experience of the wide range of chemical techniques for measurement and synthesis necessary for the study of modern chemistry. First-year topics include: molecular orbital approaches to chemical binding chemical reaction mechanisms molecular spectroscopy; You will also attend units courses covering a range of capacities and IT. The PASS scheme provides additional support in the current week tutorial area. The company it has two successful sports teams, soccer and netball, with the soccer team that won the championship last year! Teams are made up of early years up to doctoral candidates, so you can meet lots of new faces! In addition to the social side the company reinvented its academic aspects; ChemSoc hosts research conferences accessible to all students with our high level of research from Manchester. University laboratories also have 3 HPLC instruments and an HPLC-MS to help you learn the fundamentals and applications of measurement and separation science. You will also take your practical chemistry and independent learning to a higher level with extensive, advanced experimental and theoretical research projects. Examinations take place in January and May each year, with about one-third of the continuous assessment marks. From the practical scientist through the research technologist to the academic specialist, everyone can be reached, in part, through this contemporary and multidisciplinary degree course. program.