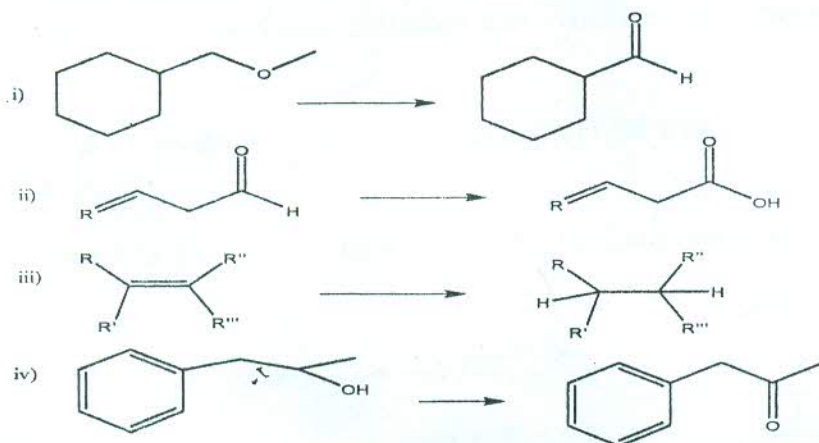


DEPARTMENT OF CHEMISTRY
FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA

B.TECH. SECOND SEMESTER EXAMINATION 2022/2023 SESSION

COURSE CODE:	CHM 525	UNITS: 2
COURSE TITLE:	ORGANIC REACTION AND SYNTHESIS	
TIME ALLOWED:	2 HOURS	
INSTRUCTION:	ANSWER ANY THREE (3) QUESTIONS.	

Q1. a. Based on the increase or decrease in number of hydrogens and heteroatoms only, justify which of the following reactions is oxidation or reduction. **(8 marks)**



b. 2-Methylhexan-2, 3-diol reacts with potassium iodate to produce 1 mole each of an aldehyde and ketone as major products, as well as, some minor products. Propose a suitable mechanism and name all products formed. **(6 marks)**

c. Consider the reaction below and suggest a probable mechanism and name both products.



mCPA = meta-Chloroperbenzoic acid; A and B = major and minor products, respectively. **(6 mks)**

Q2a. Starting from a reaction of propanone in the presence of perbenzoic acid, outline mechanistically, the synthesis of methylethanoate. **(10 marks)**

b. Consider a self-Aldol condensation reaction between 2 molecules of Butanal in the presence of aq. NaOH and heat:

(i) Outline the reaction and name all products formed.

(ii) Propose a suitable mechanism for the conversion.

(iii) How important is such a reaction?

(10 marks)

Q3.a. Consider the synthesis of some carbonyl compounds via the scheme below:



- Suggest a suitable mechanism.
- Name all products formed..
- What is the uniqueness of the reaction?

b. Assuming the alkene used in (3a) above was replaced with 3-Methylpent-2-ene; Predict what will be the products (and names) of the oxidative and reductive workups of the ozonide. No mechanism required.

c. What is the name of such reactions, why are they called so and of what importance are they in organic synthesis? (20 marks)

Q4. Complete the following reactions and name all products formed.

(20 marks)

