



TECHNICAL UNIVERSITY OF MOMBASA

Faculty of Engineering and Technology
Department of Mechanical & Automotive Engineering
UNIVERSITY EXAMINATION FOR:
Diploma Chemical Engineering
ACH 2151 : ORGANIC CHEMISTRY
END OF SEMESTER EXAMINATION
SERIES: AUGUST 2017
TIME: 2 HOURS
DATE: Pick Date Sep 2017

Instruction to Candidates:

You should have the following for this examination

- *Answer booklet*
- *Non-Programmable scientific calculator*

This paper consists of **FIVE** questions. Attempt question **ONE** and any other **TWO** questions.

Maximum marks for each part of a question are as shown.

Do not write on the question paper.

Question ONE

- a) Define the following terms; i) Hybridization
ii) Functional Group 5 marks
- b) i) State the rules of Nomenclature of simple Alkanes. 10 marks
ii) Show the structure of 5- Ethyl-2,2- dimethyldecane 5 marks

Question TWO

- a) What are Isomers? Give three types of them. 4 marks
- b) Explain the following inter-molecular bonds, giving one example in each;
- i) Ionic bonds
 - ii) Hydrogen bonds
 - iii) Dipole- dipole interactions
 - iv) Van der Waals interactions 16 marks

Question THREE

- a) Briefly explain properties of Alcohols. 10 marks
b) What are the properties of Carboxylic acids? 10 marks

Question FOUR

- a) i) What is a Functional Group? State SIX functional groups. 5 marks
ii) Differentiate between Aldehydes and Ketones. 4 marks
b) i) The identification of sp , sp^2 and sp^3 centers is simple if some rules are followed. State these SIX rules. 6 marks
ii) Show the structure of 4-Ethyl-3-methyloctane 5 marks

Question FIVE

- a) Briefly explain the reactions of amines by; i) Alkylation
ii) Elimination
iii) Acylation 10 marks
b) i) Show a general synthesis of nitriles involving the dehydration of primary amides with thionyl chloride. 6 marks
ii) What is organic Chemistry? 4 marks