



**TECHNICAL UNIVERSITY OF MOMBASA**

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FACULTY OF APPLIED AND HEALTH SCIENCES  
DEPARTMENT OF PURE & APPLIED SCIENCES

**UNIVERSITY EXAMINATION FOR:**  
**DFQA 16S AND DPT 17S**

ACH 2225 : ORGANIC CHEMISTRY  
SPECIAL/SUPPLEMENTARY EXAMINATION

**SERIES: SEPTEMBER 2018**

**TIME: 2 HOURS**

**DATE:** Pick Date Sep 2018

**Instructions to Candidates**

You should have the following for this examination

*-Answer Booklet, examination pass and student ID*

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

**Do not write on the question paper.**

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Question ONE

**(a) Carboxylic acid  $\text{CH}_3\text{CH}_2\text{COOH}$  reacts with the following reagents to form different products.**

**(i) NaOH (ii) Alcohol in presence of acid catalyst. (iii)  $\text{LiAlH}_4$ . (iv)  $\text{Cl}_2$ . Write equation of each reaction and name the products. (12marks)**

**(b) (i) State Markownikoffs rule. (2marks)**

**(ii) Use Markownikoffs rule to indentify major and minor products of the following reaction.  $\text{CH}_3\text{CH}=\text{CH}_2 + \text{HBr}$  (4marks)**

**(c) State FOUR uses of amines giving a specific example in each case. (8marks)**

**(d) Draw the structures of the following compounds. (i) 3-Chloro phenol, (ii) 2-naphthol (4marks)**

## Question TWO

(a) Draw and name structures of aldehydes and ketones formed by oxidation of the following alcohols

(i)  $\text{CH}_3\text{CH}_2\text{CHOHCH}_3$ , (ii)  $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$ , (iii)  $(\text{CH}_3)_3\text{COH}$ . (9marks)

(b) (i) State Saytzeff rule. (2marks)

(ii) Using the above rule, write the name and the formulae of the major and the minor products in the following reaction.  $\text{CH}_3\text{CH}_2\text{CHOHCH}_3$  reacted with  $\text{H}^+/\text{Heat}$  (4marks)

## Question THREE

(a) Give the FOUR hybridizing orbitals of anthracene. (8marks)

(b) How can you distinguish benzene and phenol in the laboratory by using a simple experiment. (5marks)

(c) State TWO electron withdrawing groups that are found in carboxylic acids.

## Question FOUR

(a) Give an example in each case differentiate between primary, secondary and tertiary amines. (9marks)

(b) Draw the following compound structures. (i) Benzaldehyde (ii) 2-methyl propanal (iii) 2-methyl cyclopentanone (6marks)

## Question FIVE

(a) Write down the following compounds structures: (i) butanone (ii) propanoic acid

(iii) 2,3,4 trimethyl pentane (iv) cis and trans 2,3-dibromo butane (9marks)

(b) Why is phenol not used as antiseptic at present. (2marks)

(d) Name and draw TWO structures of phenol derivatives that are used as antiseptics. (4marks)