



TECHNICAL UNIVERSITY OF MOMBASA
FACULTY OF APPLIED AND HEALTH SCIENCES
DEPARTMENT OF PURE & APPLIED SCIENCES

UNIVERSITY EXAMINATION FOR:

DIPLOMA IN ANALYTICAL CHEMISTRY

DAC 16S

ACH2205 : ORGANIC CHEMISTRY II

END OF SEMESTER 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.

Question ONE

- (a) State **FOUR** properties of alkyl halides. (8marks)
- (b) In diffused light Cl_2 reacts with methane to form a range of products. Write the chain reactions and name the intermediates and the final product. (8marks)
- (c) Complete the following reactions and name the products.
- (i) $\text{CH}_3\text{CHO} + \text{HCN} \longrightarrow$ (5marks)
- (ii) $\text{HCHO} + \text{H}_2\text{O} \longrightarrow$ (3marks)
- (d) Draw the structures of the following compounds. (6marks)
- (i) Benzaldehyde (ii) 4-chloro benzaldehyde (iii) cyclopentanone.

Question TWO

- (a) (i) Phenol is a stronger acid than aliphatic alcohol. Explain. (3marks)
- (ii) Why is phenol not used as antiseptic these days. (1mark)
- (iii) Name and draw TWO derivatives of phenol that are used as antiseptics. (5marks)
- (b) Name and classify the following alkyl halides as 1^o, 2^o and 3^o alkyl halides.. (6marks)
- (i) CH₃CH₂Cl (ii) (CH₃)₂CHBr (iii) (CH₃)₃CBr

Question THREE

- (a) State the use of each of the following compounds in chemistry. (6marks)
- (i) Aromatic aldehydes. (ii) acetone (iii) Formaldehyde
- (b) An acid chloride (CH₃-COCl) can be reduced by Pd/BaSO₄ to form a product. (3marks)
- (i) Write the reduction equation and name the product. (6marks)
- (ii) Write equation for its reaction with organo lithium (CH₃CH₂Li) and name the product.

Question FOUR

- (a) Why do Carboxylic acids have a higher boiling points and melting points than corresponding alcohols. (3marks)
- (b) State FOUR properties of carboxylic acids. (8marks)
- (c) Write equations for hydrolysis of nitriles (R-CN) (4marks)

Question FIVE

- (a) With a reason, arrange the following acids in order of acidic strength. (7marks)
- CH₂ClCOOH, CH₃COOH, CCl₃COOH
- (b) The only soluble alcohols in water are methanol, ethanol and propanol. Explain why? (2marks)
- (c) (i) Give TWO requirements of a nitration process. (2marks)
- (ii) Name and draw structure of nitrated product of 2-methyl phenol. (2marks)
- (d) Which of the two amines will have higher boiling point and why. CH₃CH₂CH₂NH₂ and CH₃CH₂NHCH₃.