



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF PURE & APPLIED SCIENCES

UNIVERSITY EXAMINATION FOR:

DIPLOMA IN PHARMACEUTICAL TECHNOLOGY

DPT 16S

ACH2105 : ORGANIC CHEMISTRY 1

END OF SEMESTER EXAMINATION

SERIES: DECEMBER 2016

TIME: 2 HOURS

DATE: Pick Date Select Month Pick Year

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) Draw and name isomeric structural of a compound with molecule formulae. C_5H_{10} . (6marks)
- (b) Ethene reacts with bromine to form a product.
- (i) Name and draw the structural formulae of the product. (2marks)
- (ii) Name this type of reaction. (1mark)
- (c) Show how sigma and pi bonds can be formed from S and P orbitals. (4marks)
- (d) Indicate the functional group of the following compounds.
- (i) Alcohols. (ii) Alkanes. (iii) Alkynes. (iv) Alkenes. (v) Ketones. (vi) Aldehydes. (6marks)
- (e) Explain a simple experiment that can be done in the laboratory to distinguish between ethene and ethane. (4marks)

(f) State the ANY THREE main features of SP^3 hybrid orbitals. (7marks)

Question TWO

(a) Define the following terms.

(i) Racemic mixture. (ii) Enantiomers. (iii) Free radical. (iv) Chiral carbon. (6marks)

(b) State THREE properties of enantiomers. (6marks)

(c)(i) Draw cis and trans isomers of the following compound and name them. $CHBrCHBr$. (3marks)

Question THREE

(a)(i) Draw and name functional group isomers of a compound with the following molecular formulae.

C_3H_6O . (4marks)

(ii) Which of the above isomers will have high mpt. and high bpt. and why? (4marks)

(b) (i) Define tautomerism. (3marks)

(ii) Use ethyl-3-oxobutanoate to show the above behavior. (4marks)

Question FOUR

(a) A compound X containing C,H and O atoms ,is subjected to combustion analysis. 0.1g of the compound on complete combustion gave 0.228g of CO_2 and 0.0931g of water. Calculate

(i) Empirical formulae of the compound. (9marks)

(ii) Obtain and name two functional group isomers of the compound from the empirical formulae. (4marks)

(b) Define and give an example of a polar molecule. (2marks)

Question FIVE

- (a) (i) State TWO condition for formation of hydrogen bond. (3marks)
- (ii) Give THREE examples of molecules that form hydrogen bonds. (3marks)
- (b) Draw structures of position isomers of a compound with the following molecular formulae.
 $C_4H_{10}O$ and name them. (6marks)
- (c) Write the name of the products of oxidation of the isomers obtained in (b) above. (3marks)