



THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

A. M. E. C. E. A

MAIN EXAMINATION

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AUGUST – DECEMBER 2018 TRIMESTER

FACULTY OF SCIENCE

DEPARTMENT OF NATURAL SCIENCE (CHEMISTRY)

REGULAR PROGRAMME

CHEM 409: NATURAL PRODUCTS CHEMISTRY

Date: DECEMBER 2018

Duration: 2 Hours

INSTRUCTIONS: Answer Question ONE and ANY OTHER TWO Questions

Q1. a) Draw the structures of the following compounds : **(5 marks)**

- i) Ephedrine
- ii) Methamphetamine
- iii) Linoleic acid
- iv) α -Linolenic acid
- v) Phenethylamine

b) Define the followings : **(3 marks)**

- i) Enzyme
- ii) Enzyme inhibitor
- iii) Natural product

c) i) From which class of compounds do Ephedrine, Methamphetamine and phenethylamine belong to ?

ii) What are the building blocks in the construction of fatty acids and where does the biosynthesis of fatty acids occur?

iii) Explain the difference between primary and secondary metabolites. **(6 marks)**

- d) The prostaglandins are a group of modified C₂₀ fatty acids first isolated from human semen. List and draw the three essential fatty acids used for the biosynthesis of the prostaglandins and the corresponding prostaglandins. **(6 marks)**
- e) Give the pharmacological usages of prostacyclin **(6 marks)**
- f) Give the different steps involved in the biosynthesis of the following compounds: **(12 marks)**
- i) Poly- β - Keto ester
 - ii) Emodin
- Q2. Discuss the biosynthetic pathways and usages of Erythromycin **(6 marks)**
- Q3. Briefly discuss the occurrence of terpenoids and classify some of the terpenoids that you know **(6 marks)**
- Q4. a) Define alkaloids and name the principal amino acid precursors of alkaloids **(3 marks)**
- b) Give example of three bioactive alkaloids (drugs) and the plants in which they occur **(3 marks)**

END