



THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

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MAIN EXAMINATION

SEPTEMBER –DECEMBER 2021

FACULTY OF SCIENCE

DEPARTMENT OF CHEMISTRY

REGULAR PROGRAMME

CHEM 409: NATURAL PRODUCTS

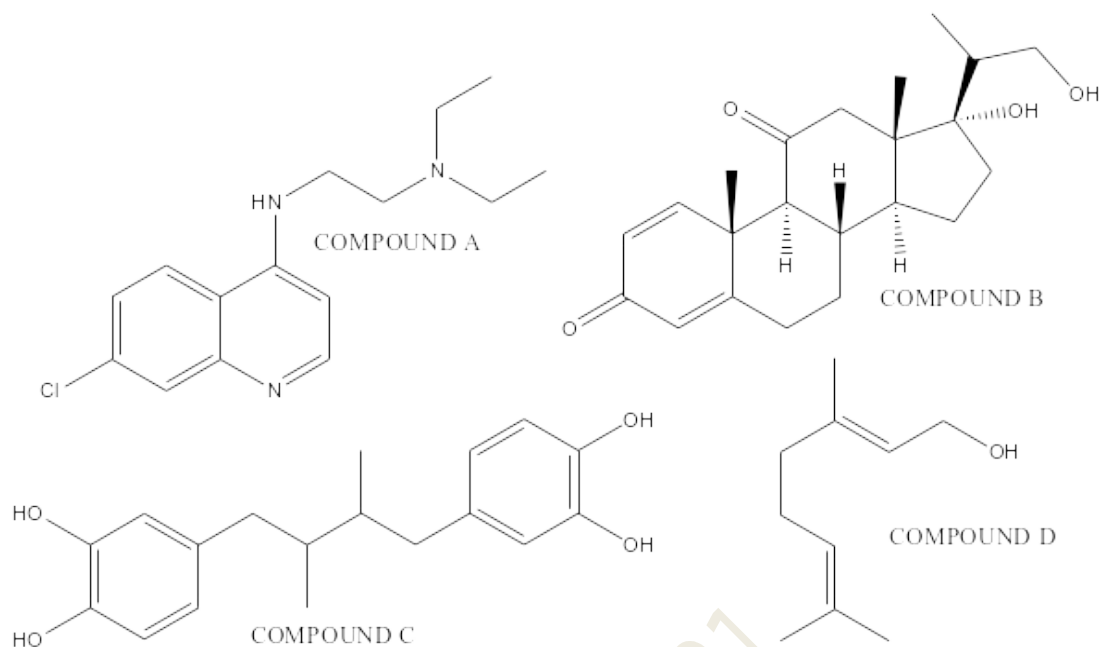
Date: DECEMBER 2021

Duration: 2 Hours

INSTRUCTIONS: Answer Question ONE and any TWO Questions

Q1.

- a. With the aid of suitable examples and structures where possible, explain the differences between the following:
- i. Primary and secondary metabolites
 - ii. Hormones and pheromones
- (4 marks)**
- b. Discuss the classification of terpenoids giving an example in each case.
- (10 marks)**
- c. Below are structures of examples of useful drugs. Classify each compound as an alkaloid, a sterol, a phenolic compound or terpene. Give reason for your answer.
- (8 marks)**



- d. Discuss the biosynthetic classification of alkaloids. **(5 marks)**
 e. State 3 importance of natural products. **(3 marks)**

Q2.

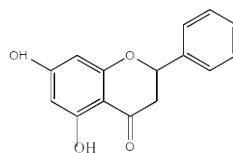
- a. Discuss the classification of lipids giving examples in each case. **(10 marks)**
 b. Describe any three spectroscopic methods that can be used to identify natural products. **(10 marks)**

Q3.

- a. Draw the structure palmitic acid, prostaglandin and testosterone. **(6 marks)**
 b. Starting with acetylCoA describe the biosynthesis of fatty acids. **(11 marks)**
 c. State any three uses of fatty acid **(3 marks)**

Q4.

- a. What are phenolic compounds. **(2 marks)**
 b. Discuss the classification of phenolic compounds. **(10 marks)**
 c. Outline the biosynthetic pathway of flavanone(7) from phenylalanine. **(8 marks).**



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Q5.

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|--|-------------------|
| a. Define alkaloids and give an example. | (2 marks) |
| b. Describe the isolation, purification and identification of alkaloids. | (10 marks) |
| c. Outline the biosynthesis of alkaloids. | (8 marks). |

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END