



# KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS  
2017/2018 ACADEMIC YEAR  
SECOND YEAR SECOND SEMESTER  
SUPPLEMENTARY EXAMINATIONS

FOR THE DEGREE OF B.ED (SCIENCE)

**COURSE CODE:** SCH 431

**COURSE TITLE:** CHEMISTRY OF NATURAL PRODUCTS

**DURATION:** 2 HOURS

**DATE:** 04/10/2018

**TIME:** 11:30-1:30PM

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## INSTRUCTIONS TO CANDIDATES

- (i) Answer all questions
- (ii) Do not write on this question paper
- (iii) Show your working clearly

This paper consists of 4 printed pages. Please Turn Over



KIBU observes ZERO tolerance to examination cheating

**QUESTION ONE ( 30 MARKS)**

a) Define each of the following terms:

(6 marks)

(i) Trinorsesquiterpene

(ii) Primary metabolites

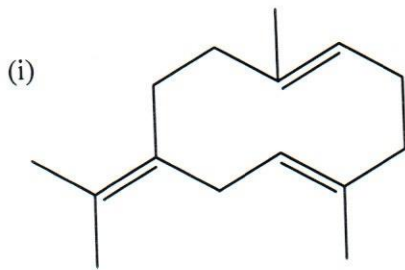
(iii) Biogenesis

b) List any **THREE** basic building blocks for secondary metabolites.

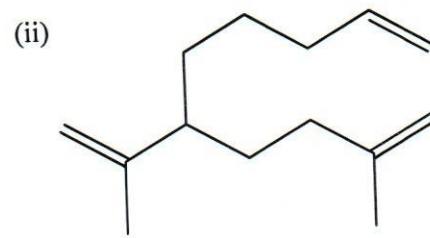
(3 marks)

c) Mark out the isoprene units in each of the following terpenoids:

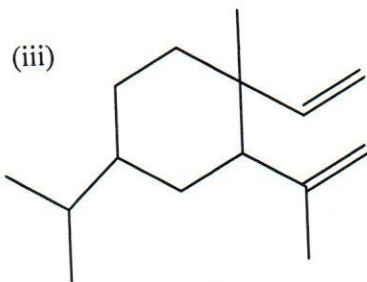
(6 marks)



Germacren



Beta-Elemen

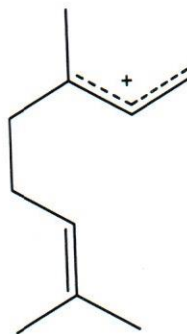


Elixen

d) Name any four physical methods applied to elucidate the structure of alkaloids (4 Marks)

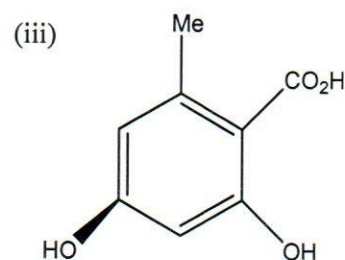
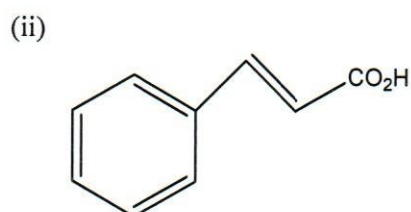
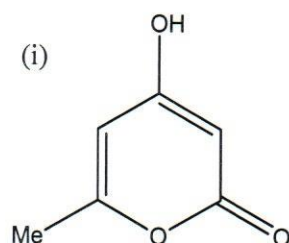
e) Give the two stabilize allylic cations of a geranyl cation below:

(4 marks)



f) Name the biosynthetic pathway of the following natural products

(3 marks)



g) Describe four chemical tests for alkaloids

(4 Marks)

### QUESTION TWO (20 MARKS)

a) Name two pathways that produce phenolic compounds

(2 Marks)

b) Name four major phenolic classes of compounds

(4 Marks)

c) Name the precursor compounds of the following terpenoids

i) Sesterterpenes

ii) Sesquiterpenes

(4 Marks)

d) One of the steps in fat metabolism is the reaction of glycerol (Propane- 1,2,3-triol) with ATP to yield glycerol-1-phosphate. Write the reaction and draw the structure of the product

(4 Marks)

e) State three categories of flavonoids

(3 Marks)

f) State general reactions for biosynthesis of alkaloids

(3 Marks)

### QUESTION THREE (20 MARKS)

a) i) Define bioassay

(3 Marks)

ii) Explain the principle behind bioassays

(5 Marks)

iii) Explain classification of bioassays

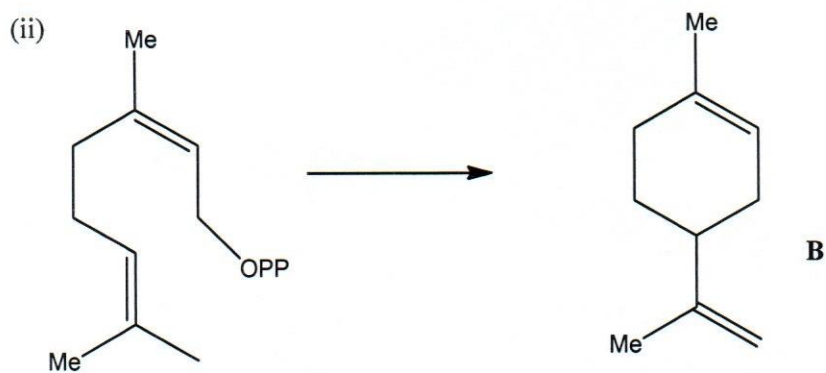
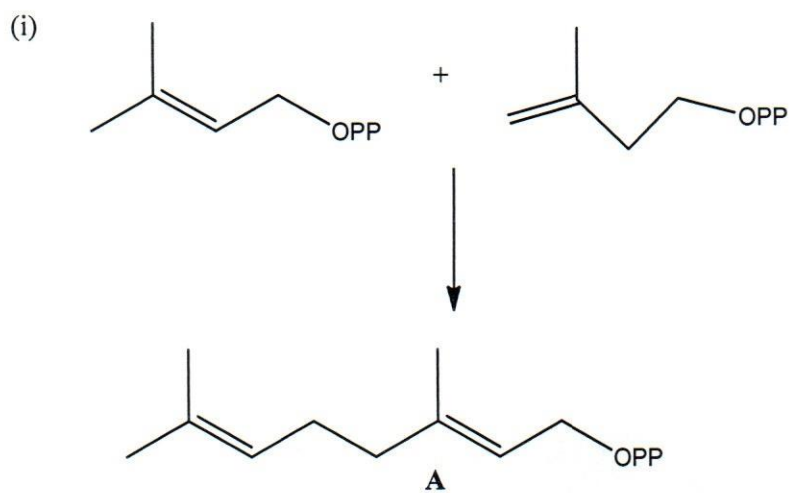
(6 Marks)

b) Name two human hormone that are steroidal

(2 Marks)

c) Name four main sources of natural products

(4 Marks)



\*\*\*\*\*END\*\*\*\*\*