



NATIONAL OPEN UNIVERSITY OF NIGERIA
University Village, Plot 91 Cadastral Zone, Nnamdi Azikiwe Express Way,
Jabi - Abuja.

FACULTY OF SCIENCES
DEPARTMENT OF PURE AND APPLIED SCIENCES
JULY 2017 EXAMINATION

COURSE CODE: CHM 422
COURSE TITLE: NATURAL PRODUCTS CHEMISTRY II
COURSE UNIT: 2 UNITS
TIME: 2 HOURS
INSTRUCTION: Question one is compulsory. Answer question one and any other three questions.

1ai) State and explain the three broad categories or divisions of naturally occurring compounds. (6 marks)

1aii) Describe briefly the isolation of terpenes. (3 marks)

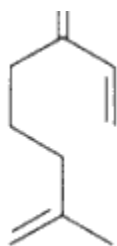
1bi) List any three chemical properties of alkaloids. (3¹/₂ mark)

1bii) Outline the stages of structure elucidation of natural products. (4¹/₂ mark)

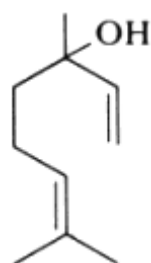
1ci) Why is it necessary to isolate, separate and purify natural products? (2 marks)

1cii) Identify the following compounds, and state any of their sources and uses.

I)



II)



(6 marks)

2ai) Write short note on alkaloids.

(6 marks)

2aii) Draw the structure of geraniol.

(4 marks)

2bi) State two physical and one chemical property of terpenes.

(3marks)

2bii) Mention two uses of essential oils.

(2 marks)

3ai) Classify alkaloids based on the heterocyclic ring system they contain in their molecular structure.

(3¹/₂ marks)

3aii) Give a brief outline of the biosynthetic pathway of carotenoids.

(4¹/₂ marks)

3bi) What is rubber?

(3 marks)

3bii) In a tabular form distinguish between rubber and gutta percha.

(4 marks)

4a) What are the general methods of extraction of natural products, (ii) what factors would you consider before choosing any of the methods? (7 marks)

4b) Give a brief description of steroids. (8 marks)

5ai) Write short note on carotenoids. ($8\frac{1}{2}$ marks)

5aii) List any four spectroscopic/analytical tools for the structural elucidation of natural products. (4 marks)

5b) Distinguish between terpenes and terpenoids. ($2\frac{1}{2}$ marks)