



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 SCIENCE
FIRST SEMESTER EXAMINATION, 2021 1234

COURSE CODE: CHM422
COURSE TITLE: NATURAL PRODUCTS CHEMISTRY II
TIME: 2 HOURS
INSTRUCTION: Answer question one and any other three questions.

QUESTION ONE

1a. Show by means of a flow chart, the stages involved in isolation and characterisation of natural products.

[8 marks]

1b. i. What are terpenes?

[2 marks]

1bii. Outline the Classes of terpenes

[7 marks]

1c. Classify alkaloids based on the nature of the heterocyclic ring system present in their molecular structure

[5 marks]

1d. Natural product has played significant role in medicine. Explain

[3 marks]

QUESTION TWO

2a. Differentiate between the following pairs

i. LC and TLC

[3 marks]

ii. GC and GC-MS

[3 marks]

iii. HPLC and FPLC

[3 marks]

2b. Outline three natural products and their pharmaceutical relevance

[6 marks]

QUESTION THREE

- 3a. What are natural products? Classify them. [6 marks]
- 3b. What are the biosynthetic path ways for the following;
- i. Alkaloid [1½ marks]
 - ii. Terpenoids [1½ marks]
 - iii. Chlorophyll [2 marks]
- 3c. Distinguish between monoterpenes and sesquiterpenes [4 marks]

QUESTION FOUR

- 4a. Differentiate between absorption spectrum and action spectrum of electromagnetic region [4 marks]
- 4b. i. List four types of vitamin B [4 marks]
- 4bii. Outline three different location of pigment within the cell [3 marks]
- 4c. Account for the reactivity of terpenes and their tendency to be resinified [4 marks]

QUESTION FIVE

- 5a. Give the following with respect to lycopene;
- i. The number of isoprene units: [1½ marks]
 - ii. Number of carbon atoms: [1½ marks]
 - iii. Product of cyclisation: [3 marks]
- 5b. Write briefly on the gas chromatography [6 marks]
- 5c. Explain what you understand by the characterization of natural product [3 marks]