



**NATIONAL OPEN UNIVERSITY OF NIGERIA PLOT 91, CADASTRAL ZONE,
NNAMDI AZIKIWE EXPRESSWAY, JABI – ABUJA
FACULTY OF SCIENCES
DEPARTMENT OF CHEMISTRY
2025_1 EXAMINATION...**

COURSE CODE: CHM 318

COURSE TITLE: NATURAL PRODUCT CHEMISTRY I

COURSE UNIT: 2

INSTRUCTION: Answer question one (1) and any other two questions

Time: 2 Hours

QUESTION 1

- 1a) Define the following classes of alkaloids with examples
- i. True alkaloids (4 marks)
 - ii. Protoalkaloids (4 marks)
 - iii. Pseudoalkaloids (4 marks)
- b) Draw the structure of cholesterol (7 marks)
- c) Briefly explain the extraction of alkaloids from plant material (6 marks)
- d) State the metabolic pathways for synthesizing terpenoids (5 marks)

QUESTION 2

- 2a) Draw the structure of cholic acid (10 marks)
- b) What are sterols? (2 marks)
- c) List four (4) sources of Nerolidol (8 marks)

QUESTION 3

- 3a) Define steroids with examples (4 marks)
- b) Draw the structures of the following
- i. Caffeine (7 marks)
 - ii. Nicotine (7 marks)
- c) What is steroidogenesis? (2 marks)

QUESTION 4

- 4a) List four (4) examples of alkaloids **(4 marks)**
- b) Briefly explain the following classes of terpenes with examples
- i. Monoterpenes **(4 marks)**
 - ii. Sesquiterpenes **(4 marks)**
 - iii. Diterpenes **(4 marks)**
- c) Briefly explain alkaloids **(4 marks)**

QUESTION 5

- 5a) List three (3) examples of protoalkaloid **(6 marks)**
- b) Differentiate between terpenes and terpenoids **(6 marks)**
- c) List four (4) classes of steroids based on functions with example **(8 marks)**