



**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)**