



**NATIONAL OPEN UNIVERSITY OF NIGERIA**  
PLOT 91, CADASTRAL ZONE, NNAMDI AZIKIWE EXPRESSWAY, JABI - ABUJA  
**FACULTY OF SCIENCES**  
**DEPARTMENT OF PURE & APPLIED SCIENCES**  
**2021\_1 EXAMINATION**<sup>1234</sup>

**COURSE TITLE: NATURAL PRODUCTS CHEMISTRY**      **COURSE CODE: CHM318**  
**TIME ALLOWED: 2 Hours**      **CREDIT: 2 Units**  
**INSTRUCTION: Answer Question ONE (1) and any other Three (3) Questions**

1. a. Classify the following into monocyclic, acyclic and bicyclic monoterpenes;  
Camphor,  $\alpha$ -pinene, citral, limonene,  $\gamma$ -terpinene, myrcene, ocimene, menthol, linalool, geraniol, nerol  
[6 marks]
- b. What are anabolic steroids? Give an example  
[4 marks]
- c. Classify alkaloids based on the nature of the heterocyclic ring system present in their molecular structure  
[6 Marks]
- d. State two steroidal hormones that are formed in ovary and placenta during pregnancy  
[4 marks]
- e. List five sources of Nerolidole  
[5 marks]

**QUESTION 2**

2. Structurally, classify steroids  
[15 marks]

**QUESTION 3**

- a. State three physiological/therapeutical properties of Dehydroleucodine  
[6 marks]
- b. Draw the basic structure of cholestane and number the carbon atoms  
[9 marks]

**QUESTION 4**

- a. List four examples of terpenoids that have physiological activities  
[6 marks]
- b. i. Draw the structure of diterpenoids 'retene'  
[3 marks]
- c. State three types of monoterpenes each with an example  
[6 marks]

**QUESTION 5**

- a. Give one example each of the following;  
[3 marks]
  - i. Animal steroid
  - ii. Plant steroid
  - iii. Fungus steroid
- b. Draw the structures of the following terpenes  
[8 marks]
  - i. Farnesol
  - ii. Myrcene
  - iii. limonene
  - iv.  $\alpha$ -pinene
- c. Differentiate between terpenes and terpenoids.  
[4 marks]