



**NATIONAL OPEN UNIVERSITY OF NIGERIA
14-16 AHMADU BELLO WAY, VICTORIA ISLAND LAGOS
SCHOOL OF SCIENCE AND TECHNOLOGY
MARCH/APRIL 2015 EXAMINATION**

SCHOOL OF SCIENCE AND TECHNOLOGY

COURSE CODE: CHM318
COURSE TITLE: Natural Product Chemistry
Time: 2 Hours\

Instruction Answer any Four Questions

1. a) i. Define a Steroid. (1 mark)
ii. Describe and draw the Structure of a Gonane. (3½ marks)
b) i. Draw the Mevalonate pathway involved in Steroid synthesis. (8 marks)
ii. Describe the Pathway. (3 marks)
iii. . Define the following; Terpenes, Terpenoids. (2 marks)
2. a) Draw the structure of the following compounds; α -myrcene, cis- α -ocimene, 4-trans-6-trans- α -alloocimene. (3 marks)
b) i. Give a detailed elaboration of Diterpenes and list 5 examples of its class. (6½ marks)
ii. List the 4 groups of Vertebrate steroid and state 2 biological importance of each. (8 marks)
3. a) i. Define Steroidogenesis. (1 mark)
ii. List the products of Human Steroidogenesis. (2½ marks)
b) Give 7 detailed elaboration on the importance of Terpenes. (14 marks)
4. a) i. Classify Steroids based on their Taxonomy and give examples of each. (3 marks)
ii. State 2 acyclic representatives of Farsenans, draw the structure of the compound sand give 2 importance of each. (7 marks)
b) i. Describe the Mannich reaction involved in Alkaloid synthesis and show the reaction pathway. (3½ marks)
ii. Enumerate on 2 applications of Alkaloids with one example in each. (4 marks)
5. a) List 5 mechanisms by which Dimeric Alkaloids are formed, stating one example in each. (5 marks)

- ii. Describe the compound Phorbol, stating its biological importance. (2½ marks)
- b) In a tabular form, show the main synthesis steps and 2 examples of each of the following alkaloid derivatives; (10 marks)
- i. Tropane derivative
 - ii. β -Phenylethylamine derivatives
 - iii. Spermidine derivatives
 - iv. Purine derivatives
 - v. Oxazole derivatives
6. a) i. State 5 properties of Alkaloids. (5 marks)
- ii. Highlight the 5 major classes of Alkaloid and give one example in each. (7½ marks)
- b) In a tabular form, give the structural classification of steroids based on their chemical composition. (5 marks)