**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 SCIENCES**

**JANUARY/FEBRUARY2018 EXAMINATION**

**COURSE CODE: CHM 422**

**COURSE TITLE: NATURAL PRODUCTS CHEMISTRY II**

**TIME: 2 HOURS**

**INSTRUCTION: Question one is compulsory. Answer question one and**

**any other three questions.**

**QUESTIONONE**

1ai) State the primary constituents of the essential oils of plants and flowers.2marks

1aii) Explain how essential oils can be extracted from plants by steam distillation. 3marks

1aiii) What is the composition of terpenes.2marks

1aiv) State the uses of monoterpenes.2marks

1bi) Differentiate between carotenes and xanthophlls.3 marks

1bii) Outline the stages ofthe structural elucidation of natural products.5 marks

1ci) Why is it necessary to isolate, separate and purify natural products?2 marks

1cii) Name the following compounds, and state any of their sources and uses.

I)



II)

6 marks

**QUESTION TWO**

2a) State the different classes of terpenes and differentiate them.12 marks

2b) Classify alkaloids based on the heterocyclic ring system they contain in their molecular structure.3 marks

**QUESTION THREE**

3a) Discuss the extraction, isolation and characterizationof natural products. 10 marks

3aii) Give a brief outline of the biosynthetic pathway of carotenoids.5marks

**QUESTION FOUR**

4a)What are the general methods of extraction of natural products and what would you consider before choosing any of the methods. 6 marks

4b) Give a brief description of steroids. 9 marks

**QUESTION FIVE**

5ai)Write a short note on carotenoids. 6marks

5aii) List any fourspectroscopic/analytical tools for the structural elucidation of natural products.

4 marks.

5bi) Diffenriatebetween terpenes and terpenoids. 3marks

5bii)State two importance of Steroids.2 marks