NATIONAL OPEN UNIVERSITY OF NIGERIA
14/16, Ahmadu Bello Way, Victoria Island

SCHOOL OF SCIENCE AND TECHNOLOGY
October, 2013 Examination

COURSE CODE: CHM 422

COURSE TITLE: Natural Products Chemistry II.

COURSE UNIT: 2 Units.

TIME: 2 hours

INSTRUCTION: Answer any 4 questions.

(1) Write short notes on the following:
(a) Ion-exchange chromatography (4 marks)
(b) Size-exclusion chromatography (3.5 marks)
(c) Gas chromatography (3.5 marks)
(d) High-Performance Liquid chromatography (3.5 marks)
(e) Affinity chromatography (3.5 marks)

(2) (a) Describe any four tests for alkaloids (3 marks each) (12 marks)
(b) State any four properties of alkaloids (1½ mark each) (6 marks)

(3) (a) List any five spectroscopic tools for the structural elucidation of natural products (1½ mark each)
(b) Highlight the stages involved in the isolation and characterization of natural products (5 marks)
(c) List five properties of terpenes (5 marks)

(4) (a) List three Laboratory Methods of Organic-Solvent Extraction of Compounds (6 marks)
(b) Describe how you would extract the natural products in a plant tissue by Soxhlet extraction of chemical compounds using a 1:1 mixture of methylene chloride/methanol (12 marks)

(5) (a) Classify alkaloids according to the heterocyclic ring system they contain. (6 marks)

(b) Give a named example of each class of alkaloids mentioned above. (6 marks)

(c) Write an equation illustrating the synthesis of Coniine from α-picoline (6 marks)

(6) Write briefly on the following classes of terpenes.

(a) Hemiterpenes (3.5 marks)

(b) Sesquiterpenes (3.5 marks)

(c) Diterpenes (3.5 marks)

(d) Monoterpenes (3.5 marks)

(e) Sesterpenes (4 marks)