



BONDO UNIVERSITY COLLEGE
UNIVERSITY EXAMINATION 2012/2013
1ST YEAR 2ND SEMESTER EXAMINATION FOR THE
DEGREE OF BACHELOR OF EDUCATION SCIENCE WITH IT
(REGULAR)

COURSE CODE: SCH 303

TITLE: NATURAL PRODUCT CHEMISTRY

DATE: 29/11/2012

TIME: 8.00-10.00AM

DURATION: 2HOURS

INSTRUCTIONS

- 1) This paper contains TWO sections**
- 2) Answer ALL questions in section A COMPULSORY and ANY other TWO [2] questions in section B.**
- 3) Write ALL answers in the booklet provided.**

Section A (30 marks)

Question 1

- a) Distinguish between primary and secondary metabolism citing two secondary and two primary metabolites as examples. (5marks)
- b) Outline the process of Isolating and separating caratenoids from plant or animal samples (5 marks)
- c) Structural classification of steroids is based on the chemical composition of the steroids. describe the basic chemical structure of steroids. (2 marks)
- d) Define the term alkaloids and give its four major classes (5 marks)
- e) State five important functions of carbohydrates (5 marks)
- f) Draw and give the numbering sequence of the basic flavonoid structure (3 marks)
- g) Name five Classes of carotenoids based on their structural types (5 marks)

Section B (Answer any TWO questions) 20 marks each

Question 2 (20 marks)

- a) Name the two main pathways for the biosynthesis of wax components. (2 marks)
- b) From the two named draw a schematic presentation of either one of them with a brief description of the steps involved. (5 marks)
- c) Name four types of commercial waxes and their uses. (4 marks)
- d) The functions of terpenes in plants is generally considered to be both ecological and physiological; name three of them (3 marks)
- e) State the name of the 5-carbon unit that forms the basis of classification of terpenes and draw its basic structure (2 marks)
- f) State four classes of terpenes based on the number of the above 5-carbon units (4 marks)

Question 3 (20 marks)

- a) Give five classes of steroids with an example stating the carbon components present in each. (5 marks)

- b) Outline five important applications of alkaloids giving an example of the relevant alkaloid (5 marks)
- c) Draw a sketch of the biosynthesis of flavonoids. (4 marks)
- d) Out of the eight classes of flavones name and draw representative structures for five of them (4 marks)
- e) Name four diseases and their respective curative flavonoids (2 marks)

Question 4 (20 marks)

- a) Describe the ruff degradation as applied in carbohydrates chemistry (4 marks)
- b) Outline four important properties of a peptide bond (4 marks)
- c) Describe three methods applicable in the purification of proteins (9 marks)
- d) In quite alkaline solution, an amino acid contains two basic groups, $-\text{NH}_2$ and $-\text{CO}_2^-$. Which is the most basic? To which group will a proton preferentially go as acid is added to the solution. What will the product be? (3 marks)

Question 5 (20 marks)

- a) State five methods applied in the synthesis of amino acids (5marks)
- b) From the above named methods give a brief description for any two of them (15 marks)

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