



UNIVERSITY OF
SWAZILAND

FACULTY OF HEALTH SCIENCES

B.Sc. ENVIRONMENTAL HEALTH SCIENCE

MAIN EXAMINATION:

TITLE OF PAPER: FOOD ANALYSIS

COURSE CODE: EHM325

DURATION: 2 HOURS

DATE: MAY 2015

INSTRUCTIONS:

1. READ THE QUESTIONS CAREFULLY.
2. ANSWER ANY 4 OUT OF 5 QUESTIONS.
3. EACH QUESTION CARRIES 25 MARKS. WHERE A QUESTION IS SUBDIVIDED INTO PARTS, THE MARK FOR EACH PART IS SHOWN IN BRACKETS.
4. NO PAPER SHOULD BE BROUGHT INTO THE EXAMINATION ROOM.
5. BEGIN EACH QUESTION ON A SEPARATE SHEET OF PAPER.

SPECIAL REQUIREMENTS: NONE

DO NOT OPEN THE QUESTION PAPER UNTIL INSTRUCTED TO DO SO BY THE INVIGILATOR.

QUESTION 1

- a. Showing reactions involved where applicable, explain the role of each of the following reagents in the Kjeldahl method of protein determination:
- Sulphuric acid. [3]
 - Sodium sulphate. [2]
 - Copper sulphate. [2]
 - Sodium hydroxide. [3]
- b. Outline the advantages and disadvantages of each of the following protein determination methods:
- Biuret method. [7]
 - Dye binding method. [8]

[25]

QUESTION 2

Write notes on the following:

- Partition coefficient [5]
- Gradient elution [5]
- Temperature programming. [5]
- Column efficiency. [10]

[25]

QUESTION 3

- Briefly explain how moisture is detected in the volumetric determination of moisture by Karl Fischer method. [10]
- Using diagrams to illustrate, and stating examples and the solvents involved, discuss the principles in moisture determination in food using reflux distillation techniques. [15]

[25]

QUESTION 4

a. Compare and contrast the following:

- i. Dry ashing and wet oxidation. [5]
- ii. Water activity and moisture content. [5]
- iii. Crude fibre and dietary fibre. [5]
- iv. Iodine value and peroxide value. [10]

[25]

Question 5

a. Explain how analytes are detected during thin layer chromatography. [5]

b. Explain how column efficiency is characterized under the following headings:

- i. Resolution. [5]
- ii. Height equivalent to theoretical plates. [10]

c. Explain the principle responsible for separation of solutes in Gas Chromatography. [5]

[25]

END OF EXAMINATION