



**UNIVERSITY OF
SWAZILAND**

FACULTY OF HEALTH SCIENCES

B.Sc. ENVIRONMENTAL HEALTH SCIENCE

END OF SEMESTER II EXAMINATIONS

TITLE OF PAPER: FOOD ANALYSIS

COURSE CODE: EHS502

DURATION: 2 HOURS

DATE: MAY 2012

INSTRUCTIONS:

1. READ THE QUESTIONS CAREFULLY.
2. ANSWER **ANY 4 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. Distinguish between crude fibre and dietary fibre. [10]
- b. Briefly discuss the principles involved in protein determination using the Kjeldahl method. [15]

[25]

QUESTION 2

- a. State the Beer-Lambert Law. [2]
- b. With the aid of a well labelled diagram, describe the gas chromatographic system. (18)
- c. Give reasons why food samples might have to be derivatised prior to analysis by gas chromatography. (5)

[25]

QUESTION 3

- a. Write notes on the following:
 - i. Iodine value [5]
 - ii. Saponification value [5]
 - iii. Isocratic and gradient elution [5]
 - iv. Derivatistion in Gas Chromatography. [10]

[25]

QUESTION 4

- a) A grain was found to contain 11.5% moisture. A 5.2146g sample was placed into a crucible (tared 28.5053g). The ashed crucible weighed 28.5939g. Calculate the percentage ash on;
 - i. An as-received basis. [5]
 - ii. A dry matter basis. [5]
- b) After dilution to 100mL, a Kjeldahl digest containing exactly 0.2g casein was subjected to analysis. The diluted digest was found to contain 0.02M nitrogen (as ammonia). Calculate the nitrogen contents of the sample of casein (g/100g) [15].

[25]

QUESTION 5

Discuss the principles involved in moisture determination using the following procedures:

- a. Karl Fischer titration. [10]
- b. Distillation. [15]

[25]

END OF EXAMINATION