UNIVERSITY OF SWAZILAND

FACULTY OF HEALTH SCIENCES

B.Sc. ENVIRONMENTAL HEALTH SCIENCE

FINAL EXAMINATIONS

TITLE OF PAPER:	FOOD ANALYSIS
COURSE CODE:	EHS502
DURATION:	2 HOURS
DATE:	MAY 2013

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

Discuss moisture determination in food under the following headings:

a. Karl Fischer titration. [10]

b. Distillation methods. [15]

[25]

QUESTION 2

a. Showing reactions involved where applicable, explain the role of each of the following reagents in the Kjeldahl method of protein determination:
   i. Sulphuric acid. [3]
   ii. Sodium sulphate. [2]
   iii. Copper sulphate. [2]
   iv. Sodium hydroxide. [3]

b. Outline the advantages and disadvantages of each of the following protein determination methods:
   i. Lowry method. [7]
   ii. Dye binding method. [8]

[25]

QUESTION 3

a. Draw a well labelled schematic diagram of a high performance liquid chromatography (HPLC) system. [10].

b. Explain the role of the following components on the HPLC system:
   i. Guard column. [5].
   ii. UV-Visible detector. [5].

c. Explain the advantages of using reversed phase HPLC rather than normal phase. [5]

[25]

QUESTION 4

a. With the aid of diagrams, discuss the fat determination using the following techniques:
   i. Soxhlet method. [10]
   ii. Gerber method. [5]

b. Explain how the following are used to define the quality of fat:
   i. Refractive Index. [3]
   ii. Acid value. [2]
   iii. Peroxide value. [5]

[25]

QUESTION 5

a. In preparing a maize sample from a stack of bags for mycotoxin determination using high performance liquid chromatography (HPLC), suggest and discuss a suitable sampling procedure. [10]
b. Explain what is achieved by derivatisation. [5]
c. Briefly describe two of the following forms of spectral interferences in Atomic Absorption Spectroscopy:
   i. Emission. [5]
   ii. Ionisation. [5]

[25]

END OF EXAMINATION