UNIVERSITY OF SWAZILAND

FACULTY OF HEALTH SCIENCES

B.Sc. ENVIRONMENTAL HEALTH SCIENCE

SEMESTER I EXAMINATIONS (MAIN)

TITLE OF PAPER: FOOD MICROBIOLOGY I

COURSE CODE: EHS503

DURATION: 2 HOURS

DATE: DECEMBER 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 INTRUSCTED TO DO SO BY THE INVIGILATOR.

QUESTION 1

a. List 3 genera of the Coliform group of microorganisms. [3]

b. Explain why the Coliforms are used as indicators of the microbial quality of food. [10]

c. Briefly describe the preservation challenges associated with the presence of *E. coli* in fermented sausages. [4]

d. Briefly outline the types of food poisoning that may be caused by *B. cereus*. [8]

[25]

QUESTION 2

Discuss the characteristics of food poisoning caused by the following pathogenic microorganisms:

a. *Clostridium perfringens*. [10]

b. *Staphylococcus aureus*. [5]

c. *Escherichia coli* O157:H7. [5]

d. *Salmonella enteritidis*. [5]

[25]

QUESTION 3

With reference to the recent fatal food poisoning outbreak in Germany involving *E. coli* O104:H4, discuss:

a. the cause of the outbreak. [10]

b. the challenges that were encountered in containing the outbreak. [15]

[25]

QUESTION 4

a. Explain how the following factors influence the safety of food:

   i. Preparation in advance. [5]

   ii. Holding food at 21-55°C. [5]

b. State the personal habits that should be discouraged among food handlers and explain how these may affect food safety. [15]

[25]

QUESTION 5

a. Explain the difference between Class 2 and Class 3 attribute sampling plans. [5]

b. The following table shows sampling plans and recommended microbiological limits for pasteurized liquid, frozen, and dried egg products.

				Limit per gram	
Test	**Plan class**	**n**	**c**	**m**	**M**
APC	3	5	2	$5x10^4$	10^6
Coliforms	3	5	2	10^1	10^3
Salmonella, normal routine	2	5	0	0	-
Salmonella, for high risk population	2	15	0	0	-

Source: ICMSF, Microorganisms in food - 2

Explain the justification for selecting each plan and limits for the different groups/types of microorganisms. [20]

[25]

END OF EXAMINATION