



**UNIVERSITY OF SWAZILAND**  
**Faculty of Health Sciences**

**DEGREE IN ENVIRONMENTAL HEALTH**  
**FINAL EXAMINATION PAPER 2006**

- TITLE OF PAPER** : **FOOD MICROBIOLOGY**
- COURSE CODE** : **EHS 512**
- DURATION** : **3 HOURS**
- MARKS** : **100**
- INSTRUCTIONS** :
- : **READ THE QUESTIONS & INSTRUCTIONS CAREFULLY**
  - : **ANSWER ALL FIVE (5) QUESTIONS**
  - : **EACH QUESTION CARRIES 20 MARKS.**
  - : **WRITE NEATLY & CLEARLY**
  - : **NO PAPER SHOULD BE BROUGHT INTO NOR OUT OF THE EXAMINATION ROOM.**
  - : **BEGIN EACH QUESTION ON A SEPARATE SHEET OF PAPER.**

**DO NOT OPEN THIS QUESTION PAPER UNTIL PERMISSION IS GRANTED BY THE INVIGILATOR.**

**Question 1**

You have been given a food sample in order to prepare a total plate count (TPC) in the following procedure.

- a) Prepare peptone water [4]
- b) Prepare a plate count agar (PCA) [4]
- c) Plate on the agar [12]

[20 Marks]

**Question 2**

The colonies taken from the agar plates in question 1(c) will then be transferred onto slide for gram staining.

- a) Why is the gram staining procedure necessary? [2]
- b) What preparations are necessary for gram staining? [3]
- c) Then describe the gram staining procedure to be performed up to microscoping [15]

[20 Marks]

**Question 3**

A bovine carcass has been slaughtered for domestic consumption and a sample of the meat is taken to the laboratory for microbial analyses. The laboratory results showed that the sample had  $8.5 \times 10^7$  *E.coli* O157: H7. and  $4.5 \times 10^6$  *Clostridium perfringens*

- a) Explain the factors that may lead to heavy microbial load on beefy meat? [10]
- b) What (O) and (H) signify in the strain designation of *Escherichia coli* O157:H7? [5]
- c) Write short notes on aflatoxins. [5]

[20 Marks]

**Question 4**

- a) How does the environment in the abattoir influence the quality of meat? [10]
- b) Zoonotic diseases are prevalent in Swaziland particularly tuberculosis. What can be the most appropriate remedy to this problem? [10]

[20 Marks]

**Question 5**

The Swaziland Meat Industry Limited (SMI) factory located in Matsapha, slaughter cattle for the European market. The EU, has set the HACCP system as the pre-requisite standards for meat export.

You are therefore required to develop a HACCP system for the above factory.

Show all the necessary steps required and include the pre-requisite steps.

[20 Marks]