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H.H.C. B. L. L.*



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

**DEGREE IN ENVIRONMENTAL HEALTH**  
**FINAL EXAMINATION PAPER 2008**

- TITLE OF PAPER** : FOOD MICROBIOLOGY I
- COURSE CODE** : EHS 503
- DURATION** : 2 HOURS
- MARKS** : 100
- INSTRUCTIONS** :
- : READ THE QUESTIONS & INSTRUCTIONS CAREFULLY
  - : ANSWER ONLY FOUR (4) QUESTIONS
  - : EACH QUESTION CARRIES 25 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.**

Microbial behavior is not open to negotiation, unlike 'costing' or 'marketing concepts'. Microbes do not see, hear or respond to human pleas. They have no respect of persons or hierarchical status. What they can and will do is to breed rapidly unless positive preventative action is taken.

### Question 1

- a. Showing appropriate examples, explain the basic microbial classification in reference to cell morphology and bacterial biochemical properties. [12]
- b. Write short notes on botulism and control. [13]

[25 Marks]

### Question 2

Measurement of microbial growth in the laboratory is done by first conducting a serial dilution which is then followed by conducting a spread or pour plate count.

With the aid of diagrams, explain how and why these methods are conducted in the laboratory.

- a) Serial dilution [10]
- b) Spread plate count [7]
- c) Pour plate count [8]

[25 Marks]

### Question 3

- a. What (O) and (H) signify in the strain designation of *Escherichia coli* O157:H7? [5]
- b. Which two (2) foods are likely to be implicated in *E.coli* O157:H7 disease and why [5]
- c. How would you differentiate a selective media from a differential media? [5]
- d. Discuss food spoilage, showing the difference in fungal and bacterial spoilage. [10]

[25 Marks]

#### Question 4

- a) Choose two environmental factors for bacterial growth and show how they affect the food microflora. [Answer should include appropriate examples]. [20]
- b) How does the classification of bacteria such as gram negative and gram positive influence or affect survival in food? [5]
- [25 Marks]

#### Question 5

Staphylococcal food poisoning is one of the most common types of food borne disease. The symptoms are characteristic in that they develop rather rapidly, and are of relatively short duration and have no lasting effects.

- a) Discuss the important features that can be used for the enumeration and diagnosis of *S.aureus*. [10]
- b) Discuss the sources and transmission of *S.aureus*. [5]
- c) *Staphylococcus aureus* is differentiated from other staphylococcal food borne illnesses by the coagulase and thermonuclease (TNase) production. How would you test for these two distinguishing factors? [10]

[25 Marks]