



**UNIVERSITY OF SWAZILAND**

**FACULTY OF HEALTH SCIENCES**

**B.Sc. ENVIRONMENTAL HEALTH AND FOOD SCIENCE**

**SEMESTER I**

**SUPPLEMENTARY EXAMINATION PAPER - JULY 2018**

**TITLE OF PAPER:** FOOD MICROBIOLOGY

**COURSE CODE:** EHM407

**DURATION:** 2 HOURS

**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. WRITE NEATLY AND CLEARLY
6. BEGIN EACH QUESTION ON A SEPARATE SHEET OF PAPER.

**SPECIAL REQUIREMENTS:** NONE

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

**QUESTION 1**

- a. Discuss the role of indicator microorganisms in food safety. [5]
- b. Discuss what should be included in a microbiological specification for food. [10 marks]
- c. Explain the benefits of the specifications in food safety. [10 marks]

**[TOTAL: 25 marks]**

**QUESTION 2**

- a. Briefly discuss the issues associated with the development of cross resistance to antibiotics in microorganisms in the human gut. [10]
- b. Discuss the role of gut flora in human health. [8]
- c. Briefly explain why lactic acid bacteria are chosen as probiotics in food. [7]

**[TOTAL: 25 marks]**

**QUESTION 3**

- a. State the health conditions that may lead to exclusion of a food handler from handling food. [5]
- b. Describe the symptoms of food poisoning caused by the following pathogenic microorganisms:
  - i. *Clostridium botulinum*. [5]
  - ii. *Salmonella typhi*. [5]
  - iii. *Listeria monocytogenes*. [5]
  - iv. *Staphylococcus aureus*. [5]

**[TOTAL: 25 marks]**

**QUESTION 4**

- a. Name one type of the microorganism likely to occur under the following circumstances. For each, describe the characteristics of food poisoning it will cause:

- i. Refrigerated storage of ready-to-eat food. [5]
  - ii. Salads stored at room temperature. [5]
- b. Write notes on the following:

- i. Prokaryotes [5]
- ii. Mesophiles [5]
- iii. Thermophiles. [5]

**[TOTAL: 25 marks]**

**QUESTION 5**

- a. Explain how the dye reduction technique is used to detect the state of microbial quality in food. [10]
- b. Discuss the principles of the Gram stain, explaining the basis for the different reactions in different microorganisms. [15]

**[TOTAL: 25 marks]**

**END OF EXAMINATION PAPER**