



2nd SEM. 2018/19

PAGE 1 OF 3

UNIVERSITY OF ESWATINI

RE-SIT / SUPPLEMENTARY EXAMINATION PAPER

PROGRAMME : FOOD SCIENCE, NUTRITION AND
TECHNOLOGY, CONSUMER
SCIENCE YEAR II

COURSE CODE : FNS212

TITLE OF PAPER : FOOD MICROBIOLOGY

TIME ALLOWED : TWO (2) HOURS

INSTRUCTIONS : ANSWER QUESTION ONE (1)
AND ANY OTHER TWO (2)
QUESTIONS.

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GRANTED BY THE CHIEF INVIGILATOR

QUESTION 1 (COMPULSORY)

- (a) Explain how the following intrinsic factors affect microbial growth:
- pH
 - Water activity
 - Nutrients

(30 Marks)

- (b) Discuss how temperature affects microbial growth.

(10 Marks)

[TOTAL MARKS = 40]

QUESTION 2

- (a) Discuss the meaning of generation time giving one example of bacteria to illustrate generation time.

(10 Marks)

- (b) Explain the standard growth kinetics with an aid of a diagram. Also, in the same graph illustrate how the standard growth curve would be affected if water activity was reduced.

(20 Marks)

[TOTAL MARKS = 30]

QUESTION 3

A sanitizer was used to control *Listeria monocytogenes* after which the effectiveness of the sanitizer was tested using *Listeria* selective and non-selective medium. The number of cells that grew in the selective media were 1×10^2 whilst those that grew from the non-selective media were 1×10^5 cfu/mL.

- (a) Describe similarities between viable non culturable (VNC) and injured cells.

(6 Marks)

- (b) Calculate the number of injured cells.

(10 Marks)

- (c) Conclude on the effectiveness of the sanitizer on *Listeria* cells.

(10 Marks)

- (d) Describe two (2) methods that can be used to detect viability in VNC cells.

(4 Marks)

[TOTAL MARKS = 30]

QUESTION 4

- (a) List the individuals that are at risk of being affected by *Listeria monocytogenes*.
(5 Marks)
- (b) Describe the **three (3)** characteristics of STEC.
(15 Marks)
- (c) Explain the symptoms and complications of *E. coli* O157:H7.
(10 Marks)

[TOTAL MARKS = 30]