



**2<sup>nd</sup> SEM. 2017/18**

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**UNIVERSITY OF SWAZILAND**

**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) The growth of mild stressed cells of *Staphylococcus aureus* in non-selective medium was  $10^6$  whilst the growth on a selective medium was  $10^2$ . Calculate the number of injured cells of *Staphylococcus*. Also explain why cell injury is a threat to food safety.  
(10 Marks)
- (b) Explain how aerobic plate count (APC) differs from standard plate count (SPC).  
(10 Marks)
- (c) Explain the difference between Gram-positive bacteria and Gram-negative bacteria giving two (2) examples of bacteria in each case.  
(10 Marks)
- (d) Explain in detail the relationship of temperature and time on microbial growth.  
(10 Marks)

[TOTAL MARKS = 40]

**QUESTION 2**

- (a) Discuss in detail how biofilms are formed and how they are a food safety concern.  
(20 Marks)
- (b) Discuss the swab test procedure in surface testing and explain how it is different from the sticky tape method.  
(10 Marks)

[TOTAL MARKS = 30]

**QUESTION 3**

(a) Explain how the **two (2)** processes takes place:

- 1) Quorum sensing
- 2) Cell signaling

**(20 Marks)**

(b) Discuss briefly details of the **Listeriosis** outbreak which took place from December 2017 to March 2018 in South Africa, citing number of affected individuals including deaths.

**(10 Marks)**

**[TOTAL MARKS = 30]**

**QUESTION 4**

Using illustrations in growth kinetics (growth curves), choose a bacterium of your choice and show a normal growth curve of that bacteria. Explain (also illustrate in the growth curve) a typical expected response of that bacterial growth when treated with an antimicrobial treatment of your choice.

**(30 Marks)**

**[TOTAL MARKS = 30]**