UNAM
UNIVERSITY OF NAMIBIA

FACULTY	AGRICULTURE, ENGINEERING AND NATURAL SCIENCES		
SCHOOL	AGRICULTURE AND FISHERIES SCIENCES		
DEPARTMENT	FOOD SCIENCE AND SYSTEMS		
SUBJECT	FOOD MICROBIOLOGY		
SUBJECT CODE	F37001SM		
DATE	JUNE 2025		
DURATION	3 HOURS	**MARKS**	100

SECOND OPPORTUNITY EXAMINATION

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External Moderator:

This question paper consists of **one (1)** page excluding this front page.

Instructions

- **Answer all five (5) questions**
- **Calculators are allowed.**

QUESTION 1

a) Define the term food spoilage. **[2]**

b) What are the fundamental principles involved in preserving food to prevent spoilage? **[8]**

c) List and briefly explain four (4) reasons why food preservation is important. **[10]**

QUESTION 2

a) What happens to a bacterial cell when it is transferred from an isotonic environment to a hypertonic solution? **[4]**

b) Describe the structure of microbiological sampling plans and its structure used in food microbiology. **[6]**

c) Describe the different phases of the microbial growth curve in a batch culture. For each phase, explain the physiological changes occurring within the microbial population and discuss the factors that influence the transition between these phases. **[10]**

QUESTION 3

a) Food-borne illness caused by microorganisms is generally classified into different categories. Briefely, explain the three (3) different categories of foodborne illness. **[6]**

b) Briefly, differentiate between food contaminants and residue. **[4]**

c) What are the WHO's Five Keys to Safer Food, and explain how do they help prevent foodborne illnesses? **[10]**

QUESTION 4

a) Define emerging foodborne pathogens and antimicrobial-resistant foodborne pathogens. **[6]**

b) Define indicator microorganisms and highlight two uses in food industry. **[6]**

c) Outline the basic principles of food preservation and briefly, explain how each helps prevent food spoilage. **[8]**

QUESTION 5

a) Explain any two (2) factors influencing selection and stringency of microbiological sampling plans in food safety management. **[4]**

b) Identify and explain the two (2) categories of microbiological criteria in food safety, highlighting their purposes and differences in application within the food industry. **[8]**

c) A ready-to-eat chicken salad sample initially contains 2.5×10^3 CFU/g of bacteria. If stored at room temperature (25°C) for 6 hours, and assuming a known bacterial generation time of 20 minutes, calculate the final bacterial count in CFU/g after this period. **[8]**

-END OF EXAMINATION-