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

FIRST OPPORTUNITY EXAMINATION

Examiner: Dr. R.P. Shilangale

Internal Examiner: Dr. P. Hiwilepo-van Hal

External Moderator: Dr. P. Hiwilepo-van Hal

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

Instructions

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

QUESTION 1

a) What does food preservation mean, and why is it important? **[3]**

b) Briefly, describe the four (4) different categories indicator microorganisms. **[8]**

c) List and describe three (3) common manifestations of food spoilage. For each, give one example explaining the likely underlying cause (e.g., microbial, enzymatic etc). **[9]**

QUESTION 2

a) What are probiotics? Give two (2) examples of microorganisms used as probiotics. **[4]**

b) List any four (4) health benefits of probiotics for humans. **[4]**

c) Differentiate between food contamination and food spoilage? **[4]**

d) Briefly explain four (4) different types of food contamination. **[8]**

QUESTION 3

a) Define hurdle technology and explain its core principle in food preservation. **[6]**

b) Describe the two main categories of factors that influence microbial growth in food. **[8]**

c) Clearly, differentiate between food infection, food intoxication and toxico infection. **[6]**

QUESTION 4

a) Clearly, define emerging and re-emerging foodborne pathogens. **[4]**

b) Explain three (3) ways in which the emergence and re-emergence of foodborne pathogens can impact Public Health and Food Safety. **[6]**

c) During a house visit to a village, you find several villagers complaining of foodborne illness after eating a communal meal that included cooked meat, fresh vegetables, and maize dishes. What possible sources of food contamination would you suspect, and how would you educate the villagers on preventing such contamination in the future? **[10]**

QUESTION 5

a) What are microbiological criteria? **[3]**

b) Explain the key components of two-class and three-class attribute sampling plans. In your answer include the acceptance or rejection criteria. **[6]**

c) Define generation time. **[2]**

d) A sample of ready-to-eat chicken salad is tested for bacterial contamination. Initially, the bacterial count is found to be 2.5×10^3 CFU/g (colony-forming units per gram). After 6 hours of storage at room temperature (25°C), the count increases to 2.56×10^7 CFU/g.

i) Calculate the generation time (doubling time) of the bacteria under these conditions. **[6]**

ii) Comment on the potential food safety risks associated with the chicken salad after 6 hour of storage and explain the importance of proper storage conditions. **[3]**

-END OF EXAMINATION-