UNAM
UNIVERSITY OF NAMIBIA

FACULTY	AGRICULTURE, ENGINEERING AND NATURAL SCIENCES		
SCHOOL	AGRICULTURE AND FISHERIES SCIENCES		
DEPARTMENT	FOOD SCIENCE AND SYSTEMS		
SUBJECT	GENERAL MICROBIOLOGY		
SUBJECT CODE	F3611SG		
DATE	JUNE 2025		
DURATION	3 HOURS	**MARKS**	100

FIRST OPPORTUNITY EXAMINATION

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This question paper consists of **three (3)** page excluding this front page.

Instructions

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

QUESTION 1

a) Define the concept of spontaneous generation and provide one example to illustrate it. **[2]**

b) Define the term microbiome *or* microbiota and outline any two (2) important roles of the microbiome in maintaining human health. **[4]**

c) Briefly explain the four Koch's postulates used to establish a causal relationship between a microorganism and a disease. **[4]**

c) Provide a brief explanation of the five (5) key stages involved in the lytic cycle of a virus. **[10]**

QUESTION 2

a) What are the key differences between prokaryotic and eukaryotic cells in terms of their structure and where are these structural components found? **[4]**

b) Physical and chemical methods can control the growth of microbes in different ways. Describe three (3) main ways (mode of actions) these methods work to stop or reduce microbial growth. **[6]**

c) To control microbial growth, one would apply physical or chemical methods. Briefly discuss ANY four (4) physical methods that can be used to control microbial growth. **[10]**

QUESTION 3

a) Define "a Parasite". **[2]**

b) Name the two main types of life parasite cycles and briefly explain how they differ. **[4]**

c) Name three (3) different types of symbiotic relationships between organisms and briefly describe each of them. **[6]**

d) Briefly explain four (4) challenges that the world faces in the reduction of parasitic disease. **[8]**

QUESTION 4

a) Discuss four (4) different roles micro-organisms play in the production of food products. **[8]**

b) What are biogeochemical cycles? Clearly outline important chemical elements that are involved in these cycles. **[4]**

c) Explain the two main types of biogeochemical cycles. In your answer, define each type and provide examples to illustrate their roles in ecosystem functioning. **[8]**

QUESTION 5

a) Define commercial sterilization and explain its importance in the canning industry. **[4]**

b) Differentiate between disinfection and sanitation in terms of microbiological control and public health. **[3]**

c) What is the difference between fermentation and a starter culture? List the four (4) different types of fermentation. **[6]**

d) A bacterial culture starts with 1,000,000 (1×10^6) cells. It is exposed to a disinfectant that kills 90% of the population every minute (i.e., 1 Log reduction per minute).

a. How many viable cells remain after 1, 2 and 3 minutes of exposure? **[4]**

b. How long will it take to reduce the population to 1 viable cell? **[3]**

-END OF EXAMINATION-