NATIONAL UNIVERSITY OF LESOTHO

FACULTY OF HEALTH SCIENCE

DEPARTMENT OF NUTRITION

FOOD MICROBIOLOGY – NUT2304

SEMESTER II EXAMINATION

JUNE 2023 TIME: 3 HOURS MARKS: (100)

Instructions:

- Attempt all four (4) questions.

- Write each question on a separate page.

Question 1:

i. The development of microbiology as science presented some important events and their relationship to other historic landmarks. Discuss in detail to prove the relationship between a disease and a specific microorganism. **(6)**

ii. What is an Obligate anaerobe? Explain its growth patterns and outline the contribution of enzymes on oxygen effect and give an example of an obligate anaerobe microorganism. **(6)**

iii. Define Foodborne Intoxication and Foodborne Infection giving one example of a microorganism involved in each case. **(6)**

iv. Microorganisms grown in closed culture/batch culture, in which no nutrients are added and most waste is not removed, follow a reproducible growth pattern referred to as the growth curve. Draw and discuss the stages of the growth curve. **(12)**

Question 2:

i. What is lactic acid fermentation? **(3)**

ii. Explain functional foods in the food industry. **(3)**

iii. One of the most interesting properties of LAB is the ability to produce antimicrobial peptides called bacteriocins. Explain the bacteriocins. **(4)**

iv. Differentiate between probiotics and prebiotics. **(4)**

v. What are starter cultures in fermentation? **(3)**

Question 3:

i. Differentiate between Intrinsic and Extrinsic foodborne disease. **(4)**

ii. Define the Hurdle Effect as used in the food industry and explain the factors governing it. **(6)**

iii. Explain the economic costs of foodborne diseases. **(6)**

iv. Describe epidemiological investigation into a foodborne outbreak. **(4)**

Question 4:

i. Same bacterium involved in skin and wound infections and contamination by food handlers is a major factor. Describe this microorganism in detail and explain how it is isolated from the food sample. **(15)**

ii. *Listeria monocytogenes* cause invasive disease that affects at risk section of a population. Explain the pathogenesis of this bacteria from the consumption of contaminated food. **(10)**

iii. There are at least four recognized classes of enterovirulent *E. coli* that cause gastroenteritis in humans. Mention and briefly explain each class. **(8)**

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