

**THE NATIONAL UNIVERSITY OF LESOTHO**

**FACULTY OF HEALTH SCIENCE**

**FOOD MICROBIOLOGY – NUT2304**

**Supplementary Exam**

**Total Marks: (100)**

**Time: 3 hours**

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**Instructions:**

- Attempt all four (4) questions.
- Write each question on a separate page.

**Question 1:**

- i. The development of microbiology as science presented with some important events and their relationship to other historic land marks. Discuss in details 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 Food borne Intoxication and Food borne Infection giving one example of 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 growth curve? (12)

**Question 2:**

- i. What is lactic acid fermentation? (3)
- ii. Explain functional foods in 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 Food borne Intoxication and Food borne Infection giving one example of microorganism involved in each case (6)
- iii. Explain 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 details and explain how it is isolated from the food sample? (15)
- ii. *Listeria monocytogenes* causes 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)