



MURANG'A UNIVERSITY OF TECHNOLOGY

SCHOOL OF PURE, APPLIED AND HEALTH SCIENCES

DEPARTMENT OF HEALTH SCIENCES

UNIVERSITY ORDINARY EXAMINATION

2023/2024 ACADEMIC YEAR

SECOND YEAR SECOND SEMESTER EXAMINATION FOR BACHELOR

OF SCIENCE IN MEDICAL LABORATORY SCIENCE

MML 215: FOOD AND WATER MICRO BIOLOGY

DURATION: 2 HOURS

INSTRUCTIONS TO CANDIDATES:

1. Answer question one and any other two questions.
2. Mobile phones are not allowed in the examination room.
3. You are not allowed to write on this examination question paper.

SECTION A: ANSWER ALL QUESTIONS IN THIS SECTION

QUESTION ONE (30 MARKS)

- a. Define the following terms. (5 marks)
- i. Total variable count
 - ii. Pathogenic microorganisms
 - iii. Biofilm
 - iv. Spore
 - v. Bacteria
- b. The presence of bacterial contamination in food can pose serious health risk. Describe one commonly used method for enumerating bacteria in food sample outlining its key advantages and limitation. Discuss why accurate enumeration is crucial in ensuring food safety. (5 marks)
- c. Describe two common food poisoning bacteria. Highlighting their typical habitats modes of transmission to humans and key symptoms they cause. (5 marks)
- d. Explain the principle behind the methylene blue reduction test (MBRT) and its significance in assessing milk quality. (5 marks)
- e. Discuss the potential benefits and drawbacks of using pasteurization as a food preservation method. (5 marks)
- f. Describe mechanism by which faecal coliform bacteria in water can pose health risks. (5 marks)

SECTION B – ANSWER ANY TWO QUESTIONS IN THIS SECTION

QUESTION TWO (20 MARKS)

A major dairy farm has begun experiencing complain about their milk taste and texture alongside report of occasional stomach upset among consumers. Upon investigation you are tasked with analysing the situation and providing solutions. Utilize your knowledge or milk analysis methods to construct a comprehensive investigate plans. (20 marks)

QUESTION THREE (20 MARKS)

A remote community struggling with unreliable access to clean water receives a grant for innovative water treatment solutions. Discuss two potential options, analysing their benefits, drawbacks along term sustainability within the community context. Include your recommendation for the most suitable option and justify your choice. (20 marks)

QUESTION FOUR (20 MARKS)

Describe the various microorganism that contaminated food and water. (20 marks)

