



JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY
SCHOOL OF BIOLOGICAL AND PHYSICAL SCIENCES
DEPARTMENT OF BIOLOGICAL SCIENCES
UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN
BIOLOGICAL SCIENCES
4thYEAR 2ND SEMESTER 2016/2017 ACADEMIC YEAR
MAIN CAMPUS - REGULAR

COURSE CODE: SBI 3433

COURSE TITLE: FOOD MICROBIOLOGY

EXAM VENUE: STREAM: (BSC BIO)

DATE: 13/12/16 EXAM SESSION: 9.00 – 11.00 AM

TIME: 2 HOURS

Instructions:

- 1. Answer ALL questions in Section A and Any two questions in Section B**
 - 2. Candidates are advised not to write on question paper**
 - 3. Candidates must hand in their answer booklets to the invigilator while in the examination room**
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SECTION A: SHORT ANSWER QUESTIONS (30 MARKS)

1. Use specific examples to explain the importance of the following bacterial groups in food microbiology
 - i) Thermotolerant bacteria (2 marks)
 - ii) Saccharolytic bacteria (2 marks)
 - iii) Psychrotrophic bacteria (2 marks)
2. Bacteriophage viruses are known to cause fermentation failure industrial processing of milk. Explain. (2 marks)
3. Distinguish between back-slopping and controlled fermentation of food products (2 marks)
4. Explain how water sources can contribute to food contamination and state measures that can be taken to reduce their incidence in food (3 marks)
5. Explain the mode of action of the following microbial metabolites in food preservation
 - i) Propionic acid (2 marks)
 - ii) Hydrogen peroxide (2 marks)
6. Distinguish between the processing of ripened and unripened cheese (3 marks)
7. Explain the nutritional composition and quality of cow's milk. (2 marks)
8. Briefly outline the following techniques for determining microbial contamination of foods
 - i) Enumeration of colony forming units (1 mark)
 - ii) Phase-contrast microscopy (1 mark)
9. Human gastrointestinal disorders have been attributed to consumption of foods containing viable microbial pathogens. List four other sources of such disorders other than the viable pathogens (2 marks)
10. Explain the following mechanisms of food preservation
 - i) Canning (2 mark)
 - ii) Pasteurization (2 marks)

SECTION B: ESSAY QUESTIONS (40 MARKS)

11. a) Describe the role of yeasts and molds in industrial fermentation of food (20 marks)
12. a) Describe the industrial process of beer brewing (12 marks)
- b) Explain the mechanism of action of four microbial enzymes used in food processing (8 marks)
13. Discuss the roles of the following sources of food contamination
- i) Humans (5 marks)
 - ii) Sewage (5 marks)
 - iii) Soil (5 marks)
 - iv) Plants (5 marks)
14. Discuss the microbiology of yoghurt fermentation (20 marks)