

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR  
OF SCIENCE IN FOOD SCIENCE & TECHNOLOGY

FOST 212: FOOD MICROBIOLOGY II

STREAMS: BSC (FOST)

TIME: 2 HOURS

DAY/DATE: MONDAY 06/04/2020

8.30 A.M. – 10.30 A.M.

**INSTRUCTIONS:** Answer ALL questions in section A and TWO in section B

**SECTION A (30 MARKS)**

1. Describe the pathogenic mechanisms of the following involved in foodborne illness
  - (i) Enterotoxigenic Escherichia coli [2 marks]
  - (ii) Enteroinvasive Escherichia coli [2 marks]
  - (iii) Enterohemorrhagic Escherichia coli [2 marks]
  
2.
  - (i) Explain the relevance of classifying foods based on their pH in the food industry. Justify with specific examples. [4 marks]
  - (ii) What kinds and concentrations (very approximately) micro-organisms would you expect to find in the following foods? Give reasons for prediction
    - (I) Comminuted (minced) beef [2 marks]
    - (II) Freshly cooked rice [2 marks]
    - (III) Freshly prepared salad [2 marks]
    - (IV) Yoghurt [2 marks]
  
3.
  - (i) Explain the criterion in which indicator organisms must meet in order to ascertain food safety. [4 marks]
  - (ii) How can foodborne viral illnesses be prevented and controlled in the food industry? [4 marks]

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- (iii) Sampling plan in microbial analysis can be classified in two major categories, briefly describe each [4 marks]

### SECTION B (40 MARKS)

5. With reference to the ecology and characteristics of *Staphylococcus aureus*,
- (a) (i) Describe a typical sequence of events that may lead to cases of food poisoning by *S. aureus* [6 marks]
- (ii) What measures can contribute to the prevention of food poisoning by *S. aureus*? [4 marks]
- (b) Discuss various biochemical tests that are used in identification of bacteria in food [10 marks]
6. (a) (i) Explain what is meant by microbial food spoilage [2 marks]
- (ii) What metabolic activities of microbes may lead to food spoilage [4 marks]
- (iii) What general approaches are available to reduce the rate of or inhibit microbial food spoilage? [5 marks]
- (b) Discuss major sanitary indicator used to assess food safety in the food industry [6 marks]
7. Discuss the following
- (i) Toxigenic fungi [8 marks]
- (ii) Sampling plan procedure [6 marks]
- (iii) Foodborne parasites [6 marks]
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