



UNIVERSITY OF GHANA  
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B.Sc. FOOD PROCESS ENGINEERING  
FIRST SEMESTER EXAMINATION 2016/2017  
FPEN 307: INTRODUCTION TO FOOD MICROBIOLOGY

**TIME ALLOWED: 2 HOURS**

**ANSWER FOUR (4) QUESTIONS, AT LEAST TWO FROM EACH SECTION IN THE ANSWER BOOKLETS. ANSWER EACH SECTION IN A SEPARATE BOOKLET.**

**SECTION A**

1. Write short notes on any **three (3)** of the following factors that affect microbial growth. In each case, clearly state the classes of organisms with their respective growth ranges. Also indicate how the factor can be exploited in food preservation. (25 marks)
  - a. Temperature
  - b. Redox potential
  - c. Gaseous atmosphere packaging
  - d. Water activity
2.
  - a. Describe four general actions involved in microbial spoilage of foods and their respective outcomes. (10 marks)
  - b. Describe aerobic microbiological spoilage of meat stating the series of events and the associated microorganisms responsible for those events. (15 marks)
3.
  - a. What is the relevance of microbiological indicators in shelf life studies? (5 marks)
  - b. Describe three tests that can make use of microbiological indicators to predict shelf life of foods. (12 marks)
  - c. State one advantage and one disadvantage of using chemical indicators over microbiological indicators in shelf life studies. (8 marks)

**SECTION B**

4. a. Explain the following terms:
- I. Radappertization
  - II. Food intoxication
  - III. Enterotoxins
  - IV. Prebiotics
  - V. Foodborne hazards (5 marks)
- b. Give four types of manifestations of foodborne illness (5 marks)
- c. With examples discuss the global importance of foodborne illnesses (15 marks)
5. a. Discuss the conditions that could lead to foodborne diseases. (10 marks)
- b. Based on (a), suggest an intervention plan for the prevention of cholera outbreak in street food vending. (15 marks)
6. a. Discuss the importance of fermentation as a unit operation in food processing. (13 marks)
- b. Give the full name of one example of the following microorganisms: (12 marks)
- I. Homofermentative lactic acid bacteria
  - II. Heterofermentative lactic acid bacteria
  - III. Yeasts involved in Cocoa fermentation
  - IV. Microorganisms involved in the fermentation of milk into yoghurt
  - V. Lactic acid bacteria involved in the fermentation of Corn dough
  - VI. Acetic acid bacteria
  - VII. Probiotic bacteria
  - VIII. Bacteria that cause Food intoxication
  - IX. Mycotoxin producing fungi
  - X. Protozoans that cause food-borne illnesses
  - XI. Food-borne Viruses
  - XII. Psychotropic food-borne bacteria pathogen.