



ZIMBABWE

**MINISTRY OF HIGHER AND TERTIARY EDUCATION,
INNOVATION, SCIENCE AND TECHNOLOGY DEVELOPMENT**

**HIGHER EDUCATION EXAMINATIONS COUNCIL
(HEXCO)**

NATIONAL DIPLOMA

IN

FOOD SCIENCE AND TECHNOLOGY

SUBJECT: Food Microbiology

PAPER NO: 544/23/M04

DURATION: 3 hours

OCTOBER/NOVEMBER 2024 EXAMINATION

REQUIREMENTS

INSTRUCTIONS TO CANDIDATE

1. Section A : Answer all questions – 40 marks.
2. Section B: Answer any three (3) questions – 60 marks.
3. Do not write your name on the answer booklet.

SECTION A

Answer all questions.

QUESTION 1

Define the terms:

- a) Food infection (2 marks)
- b) Food intoxication (2 marks)
- c) Facultative anaerobe (2 marks)
- d) Relative humidity (2 marks)

QUESTION 2

- a) Illustrate the reproduction process of a bacteria. (8 marks)
- b)
 - i) Name the intrinsic factors that affect microbial growth. (5 marks)
 - ii) Briefly explain how the above factors influence the rate of microbial growth. (10 marks)

QUESTION 3

- a) List any five (5) methods of food preservation. (5 marks)
- b) Explain the redox potential effect on microorganisms in food. (4 marks)

SECTION B

Answer any three (3) questions.

QUESTION 4

Identify the causes of microbial spoilage in the following foods:

- a) Canned (5 marks)
- b) Fish and fish products (5 marks)
- c) Dairy products (5 marks)
- d) Fruits and vegetables (5 marks)

QUESTION 5

Bacterial culturing is a method used to isolate and identify spoilage microorganisms in food samples.

- a) Outline the plating and isolation techniques used. (10 marks)
- b) Describe culturing techniques used. (10 marks)

QUESTION 6

Discuss the production quality tests and parameters set in the fermentation process of the following products:

- a) Cheese (10 marks)
- b) Sauerkraut (10 marks)

QUESTION 7

Explain the use of radiation technology in food preservation. (20 marks)

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