



UNIVERSITY OF SWAZILAND

FACULTY OF HEALTH SCIENCES

**B.Sc. ENVIRONMENTAL HEALTH SCIENCE AND
FOOD SCIENCE**

SEMESTER I

**SUPPLEMENTARY EXAMINATION PAPER - JULY
2017**

TITLE OF PAPER: FOOD PROCESSING

COURSE CODE: EHM323

DURATION: 2 HOURS

INSTRUCTIONS:

1. READ THE QUESTIONS CAREFULLY.
2. ANSWER ANY 4 QUESTIONS.
3. EACH QUESTION CARRIES 25 MARKS. WHERE A QUESTION IS SUBDIVIDED INTO PARTS, THE MARK FOR EACH PART IS SHOWN IN BRACKETS.
4. NO PAPER SHOULD BE BROUGHT INTO THE EXAMINATION ROOM.
5. WRITE NEATLY AND CLEARLY
6. BEGIN EACH QUESTION ON A SEPARATE SHEET OF PAPER.

SPECIAL REQUIREMENTS: NONE

**DO NOT OPEN THIS QUESTION PAPER UNTIL PERMISSION IS GRANTED BY THE
INVIGILATOR.**

QUESTION 1

- a. Discuss freezing under the following headings:
- i. Cooled air freezing. [5]
 - ii. Cryogenic freezing. [5]
- b. Describe the effect of freeze drying on:
- i. Nutrients. [5]
 - ii. Microorganisms. [5]
- c. Discuss the concept of commercial sterility with respect to high acid and low acid foods. [5]

[25 Marks]

QUESTION 2

- a. Briefly explain the meaning of following terms:
- i. Relative Humidity. [3]
 - ii. Wet bulb temperature. [2]
- b. Describe the characteristics of “intermediate moisture foods”. [5]
- c. List the types of driers used for drying food. [5]
- d. Discuss the mechanism of drying food using heated air. Use a diagram to illustrate your answer. [10]

[25 Marks]

QUESTION 3

- a. Describe the factors that lead to formation of a boundary film/layer in heat exchangers during heat treatment of liquid foods. [8]
- b. Explain how the boundary layer affects the rate of heat transfer. [5]
- c. Using evaporation as an example, describe the concept of energy regeneration. [5]
- d. Discuss the benefits of energy regeneration. [7]

[25 Marks]

QUESTION 4

- a. Define surface activity. [2]
- b. Using ice cream as an example, discuss how the concept of surface activity is applied in food systems. [6]
- c. Write notes on the following:
 - a. Streamline and turbulent flow. [5]
 - b. Steady state and unsteady state heat transfer. [5]
 - c. Blanching of food. [7]

[25 Marks]

QUESTION 5

- a. State the benefits of size reduction. [5]
- b. Briefly discuss the purpose and process of conditioning/tempering in wheat milling operations. [10]
- c. Outline the steps involved in the canning of peaches. [10]

[25 Marks]

END OF EXAMINATION PAPER