



UNIVERSITY OF SWAZILAND

FACULTY OF HEALTH SCIENCES

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

SEMESTER II

SUPPLEMENTARY EXAM

JUNE 2018

TITLE OF PAPER: PRINCIPLES OF DAIRY PROCESSING

COURSE CODE: EHM324

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. State the objectives for homogenizing milk. [8 marks]
- b. Discuss the effects of homogenizing milk with respect to the following aspects:
 - i. Shelf stability of the milk. [4 marks]
 - ii. Appearance of the milk. [4 marks]
- c. Draw a flow diagram showing the correct sequence of steps for preparing evaporated milk. [9 marks]

[Total: 25 marks]

QUESTION 2

- a. There are different heat treatment processes that can be applied to milk. For each of the following heat treatment processes, state the objective of the process, the time/temperature combination, and the characteristics of the product produced:
 - i. Thermalisation. [5 marks]
 - ii. Low (intensity) pasteurization. [5 marks]
 - iii. UHT treatment. [5 marks]
- b. Heat treatment of milk can be done in a continuous or batch process. Explain the difference between the two processes. [10 marks]

[Total: 25 marks]

QUESTION 3

- a. Describe the drying of milk under the following headings:
 - i. Foam drying. [5]
 - ii. Freeze drying. [5]
 - iii. Atomisation during spray drying. [8]
- b. Describe the properties of evaporated milk. [7]

[Total: 25 marks]

QUESTION 4

Explain the principles and purpose of the following tests done on milk at the dairy:

- a. Acidity test. [5]
- b. Dye reduction test. [5]
- c. Coliform counts. [5]
- d. Freezing point determination. [5]
- e. Clot-on-boiling. [5]

[Total: 25 marks]

QUESTION 5

a. Describe the function of the following ingredients in ice-cream:

- i. Sugar. [2]
- ii. Emulsifier. [3]
- iii. Fat. [2]
- iv. Milk solids not fat. [3]

b. Describe the characteristics of good quality butter. [15 marks]

[Total: 25 marks]

END OF EXAMINATION