



UNIVERSITY OF SWAZILAND

FACULTY OF HEALTH SCIENCES

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

SEMESTER II

MAIN EXAM

MAY 2018

TITLE OF PAPER: PRINCIPLES OF DAIRY PROCESSING

COURSE CODE: EHS346

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. Why is it possible to use alkaline phosphatase to monitor the effectiveness of pasteurization? [4]
- b. State the objectives of heat treatment of milk. [6]
- c. Discuss the physical and chemical changes that occur in milk during heat treatment. [15]

[Total: 25 marks]

QUESTION 2

- a. Name the protein that is affected by rennet during cheese making. [2 marks]
- b. Explain the function of the protein named in (a) above to the stability of casein micelle. [4 marks]
- c. Why is it necessary to add rennet at pH 5.5? [2 marks]
- d. Discuss the changes that take place in milk under the following conditions:
 - i. Lowering of pH. [4 marks]
 - ii. Addition of alcohol. [5 marks]
 - iii. Beating in air. [4 marks]
 - iv. Long term storage. [4 marks]

[Total: 25 marks]

QUESTION 3

- a. Describe the spray drying process for milk. Use a diagram to illustrate your answer. [10 marks]
- b. Discuss the changes caused by heat during spray drying. [15 marks]

[Total: 25 marks]

QUESTION 4

- a. State the objectives of evaporation of milk. [6 marks]
- b. List the different types of products that can be obtained through the evaporation of milk. [4 marks]
- c. Explain why evaporation is done at reduced pressure. [3 marks]

- d. Name the two types of evaporator normally encountered in the dairy industry and briefly explain how they operate. [12 marks]

[Total: 25 marks]

QUESTION 5

- a. Use a flow diagram to illustrate the manufacture of stirred-type yogurt. [7 marks]
b. Describe the differences in the manufacture and properties of set- and stirred-type yogurts. [10 marks]
c. Describe the properties of good quality butter. [8 marks]

[Total: 25 marks]

END OF EXAMINATION