UNIVERSITY OF SWAZILAND

FACULTY OF HEALTH SCIENCES

B.Sc. ENVIRONMENTAL HEALTH SCIENCE

SEMESTER II

MAIN EXAMINATION

TITLE OF PAPER: DAIRY SCIENCE

COURSE CODE: EHS506

DURATION: 2 HOURS

DATE: MAY 2014

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. BEGIN EACH QUESTION ON A SEPARATE SHEET OF PAPER.

SPECIAL REQUIREMENTS: NONE

DO NOT OPEN THE QUESTION PAPER UNTIL INSTRUCTED TO DO SO BY THE INVIGILATOR.

QUESTION 1

a. Describe the function of the following enzymes in milk:
   i. Lactoperoxidase. [5]
   ii. Lysozyme. [4]
b. "Alkaline phosphatase is used to check the effectiveness of the pastuerisation process". Explain. [5]
c. Draw the structure of the lactose molecule. [4]
d. Giving examples, explain why the type of lactose crystal is important in the quality of some dairy products. [7]

[25]

QUESTION 2

a. Describe the purpose and critical steps in evaporation of milk. [13]
b. Discuss the quality problems that may be encountered with evaporated milk. [12]

[25]

QUESTION 3

a. Briefly discuss the changes taking place in casein proteins during acidification of milk. [5]

b. Outline the manufacture and properties of cultured buttermilk and sweet buttermilk. Use diagrams where appropriate. [10]

c. Discuss the mechanism of interaction between *Streptococcus thermophilus* and *Lactobacillus delbrueckii* ssp. *bulgaricus* during yogurt manufacture. [10]

[25]

QUESTION 4

a. Draw a flow diagram showing all the key steps in the manufacture of hardened ice-cream. [15]
b. Explain the following terms in relation to ice cream:
   i. Overrun. [3]
   ii. Foam stability. [3]
c. What is the role of the following ingredients in the ice cream mixture?
   i. Fat. [2]
   ii. Emulsifier. [2]

[25]

QUESTION 5

a. Explain the role of starter cultures in cheese making. [8]

b. Write notes on the function of the following steps in cheese making:

   a. Cooking. [5]

   b. Salting. [5]

   c. Ripening. [7]

[25]

END OF EXAMINATION