



**2008/2009**

**UNIVERSITY OF SWAZILAND**

**FINAL EXAMINATION PAPER**

**PROGRAMME:** B. Sc. ENVIRONMENTAL HEALTH SCIENCE

**COURSE CODE:** EHS 506

**TITLE OF PAPER:** DAIRY SCIENCE

**TIME ALLOWED:** TWO (2) HOURS

**INSTRUCTIONS:** ANSWER ANY 4 QUESTIONS.

**THIS PAPER MUST NOT BE OPENED UNTIL THE CHIEF  
INVIGILATOR HAS GRANTED PERMISSION.**

### QUESTION 1

- a). Briefly describe the possible sources of antibiotic residues in consumer milk and explain three reasons why consumer milk must be free of antibiotics. (8 Marks)
- b). Describe and illustrate the synthesis of lactose and illustrate the two anomers of lactose. (17 Marks)

### QUESTION 2

Discuss the technology of butter making (25 Marks)

### QUESTION 3

- a). Illustrate and describe the pathway for the origin of milk triacylglyceride (10 Marks)
- b). Describe and illustrate the structure of the milk fat globule (15 Marks)

### QUESTION 4

Briefly describe the following organisms and their significance in dairy technology:

- a) *Lactobacillus delbrueckii* ssp. *Bulgaricus* and *Streptococcus salivarius* ssp *thermophilus* (7 Marks)
- b) *Saccharomyces cerevisiae* and *Torula* sp (6 Marks)
- c) *Escherichia coli* and *Salmonella enteritidis* (6 Marks)
- d) *Xanthomonas campestris* and *Klebsiella oxytoca* (5 Marks)

**QUESTION 5**

- a) If the titratable acidity of raw milk was 0.24 % what will be your conclusion about that milk and why? (6 Marks)
- b) Briefly discuss continuous flow pasteurization system and the merit of regeneration in this system. (12 Marks)
- c) Given: Milk with 4% butter fat and cream with 30% butter fat: How much cream and milk will you mix to get 100 litres of 10% butter fat cheese milk? (7 Marks)