



2ND SEM. 2010/2011

UNIVERSITY OF SWAZILAND

FINAL EXAMINATION PAPER

PROGRAMME: B. Sc. ANIMAL SCIENCE AND
B.Sc. AGRICULTURAL EDUCATION
YEAR IV

COURSE CODE: APH 404

TITLE OF PAPER: DAIRY TECHNOLOGY

TIME ALLOWED: TWO (2) HOURS

INSTRUCTIONS: ANSWER ANY 4 QUESTIONS.

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

QUESTION 1

- a) Outline the biosynthesis of milk triacylglycerides. **(15 Marks)**
- b) Using molecular structures to illustrate your answers describe:
 - i. Two monosaccharides found in milk sugar. **(5 Marks)**
 - ii. An unsaturated fatty acid and a saturated fatty acid found in cream. **(5 Marks)**

QUESTION 2

Describe the technologies of producing the following dairy products:

- a) Emasi **(7 Marks)**
- b) Butter **(6 Marks)**
- c) Acid Cheese **(12 Marks)**

QUESTION 3

Explain the major differences between the following:

- a) Hydrogen peroxide system and Lactoperoxidase system **(10 Marks)**
- b) Lactic acid bacteria and coliform bacteria **(5 Marks)**
- c) Ice milk and Ice cream **(5 Marks)**
- d) Lactobionic acid and lactulose **(5 Marks)**

QUESTION 4

- a) Calculate the amount of proteins in the emasi samples produced by three different processing plants from Matsapha as presented below: **(15 Marks)**

I The spectrophotometer absorbency readings from diluted samples were:

A Sibebe Processors: $10^{-1} = 1.999$; $10^{-2} = 0.55$; $10^{-3} = 0.006$

B Mantami Products: $10^{-1} = 1.999$; $10^{-2} = 1.999$; $10^{-3} = 0.350$

C Siyavuma producers: $10^{-1} = 0.680$; $10^{-2} = 0.005$; $10^{-3} = 0.25$

II The spectrophotometer absorbency readings from standard samples were:

Protein concentration ($\mu\text{g/mL}$)	50	100	200	300	400	500
Absorbency	0.075	0.150	0.325	0.500	0.625	0.775

b) Explain the possible reasons for the differences in protein concentrations of the different emasi samples? **(4 Marks)**

c) Briefly explain 3 major differences between casein proteins and whey proteins. **(6 Marks)**

QUESTION 5

Mr Shongwe was producing yoghurt. He observed two serious problems.

Firstly, the fermentation process was taking 12 hours. Secondly the product was contaminated with yeast. Briefly discuss the possible causes for these problems and describe measures that can be taken to ensure that such problems are prevented in the future. **(25 Marks)**