UNIVERSITY OF SWAZILAND

2ND SEM. 2014/2015

FINAL EXAMINATION PAPER

PROGRAMME:	**B. Sc. ANIMAL SCIENCE DAIRY OPTION YEAR IV**
COURSE CODE:	**ASD 402**
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

Describe the role of the following enzymes in dairy product processing

a) Phosphatase (6 Marks)

b) β-galactosidase (4 Marks)

c) Lipases (5 Marks)

d) Lactoperoxidase (10 Marks)

QUESTION 2

Describe and illustrate the biosynthesis of milk lactose (25 Marks)

QUESTION 3

Describe the major differences between the following:

a) Ice cream and ice milk (8 Marks)

b) Recombined milk and toned milk (7 Marks)

c) UHT milk and Pasteurized milk (10 Marks)

QUESTION 4

Briefly discuss the fermentation technology of the following dairy products:

a) Koumis (8 Marks)

b) Yoghurt (10 Marks)

c) Emasi (7 Marks)

QUESTION 5

Milk from Sidvokodvo dairies was analysed for proteins, lactose, fat and specific gravity. The following results were obtained:

i) Absorbencies for protein standards

Absorbence	0.150	0.290	0.450	0.580	0.750
Protein concentration (µ/mL)	100	200	300	400	500

ii) Absorbencies for different dilutions of milk protein samples

a. $10^{-1} = 1.99$

b. $10^{-2} = 0.55$

c. $10^{-3} = 0.01$

iii) Absorbencies for lactose standards

Absorbence	0.175	0.380	560	0.820	1.20
Lactose concentration (µ/mL)	200	400	600	800	1000

iv) Absorbencies for different dilutions of milk lactose samples

a. $10^{-1} = 1.99$

b. $10^{-2} = 0.55$

c. $10^{-3} = 0.03$

v) The Geber fat reading was 5.2 %

vi) The corrected lactometer reading was 29.6

From the above results respond to the following:

A. Calculate the concentration of proteins in the milk samples (7 Marks)

B. Calculate the concentration of lactose in the milk samples (7 Marks)

C. Calculate the specific gravity of the milk (4 Marks)

D. Calculate the total solids in the milk (5 Marks)

E. State which dairy breed is kept at Siphofaneni and justify your answer (2 Marks)