



**2<sup>ND</sup> SEM. 2015/2016**

**UNIVERSITY OF SWAZILAND**

**FINAL EXAMINATION PAPER**

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

**COURSE CODE:** AS 403

**TITLE OF PAPER:** DAIRY PRODUCTION AND  
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**

You have been assigned to talk to farmers in the Hhohho region of Swaziland about four different dairy breeds. Discuss the characteristics of the breeds and with an explanation, recommend to them one breed to raise. **(25 Marks)**

**QUESTION 2**

Discuss the status of milk production in Swaziland and explain how it can be improved. **(25 marks)**

**QUESTION 3**

Milk samples from **THREE** farms were analysed and the following results were obtained:

Test	Mahlanya	Sikhuphe	Hluthi
Lactometer reading	18	28	35
Butter fat test (%)	3.6	4.2	2.2
Spread plates coliform colony numbers	20 from 10 <sup>-5</sup> dilution	30 from 10 <sup>-2</sup> dilution	167 from 10 <sup>-2</sup> dilution

- a) Calculate:
  - i) The specific gravity of the milk samples **(6 Marks)**
  - ii) The total solids of the milk samples **(9 Marks)**
  - iii) Coliform counts of the samples **(6 Marks)**
- b) Comment on the quality of the milk samples **(4 Marks)**  
**(25 Marks)**

**QUESTION 4**

- a) List and explain **FIVE** major differences between casein and whey proteins **(10 Marks)**
- b) Describe and illustrate the following milk biomolecules
  - i) Lactose **(5 Marks)**
  - ii) Triacylglycerides **(5 Marks)**
  - iii) Riboflavin **(5 Marks)****(25 Marks)**

**QUESTION 5**

- a) Explain the technology for cottage scale butter making. **(15 Marks)**
- b) Describes and explain **TWO** types of milk that cannot be churned to butter. **(10 Marks)**  
**(25 Marks)**