



FACULTY	AGRICULTURE, ENGINEERING AND NATURAL SCIENCES		
SCHOOL	AGRICULTURE AND FISHERIES SCIENCES		
DEPARTMENT	FOOD SCIENCE AND SYSTEMS		
SUBJECT	DAIRY SCIENCE AND TECHNOLOGY		
SUBJECT CODE	AFST 3881		
DATE	JUNE 2025		
DURATION	3 HOURS	MARKS	100

SECOND OPPORTUNITY EXAMINATION

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This question paper consists of **two (2)** pages excluding this front page

Instructions

- **Answer all four (4) questions**
- **Calculators are allowed**

QUESTION 1

- a) Provide an overview of the Namibian dairy industry, including its challenges and opportunities. [7]
- b) Explain the chemical composition of milk and how each component contributes to its nutritional and functional properties. [7]
- c) Discuss the role of enzymes such as lactase, lipase and protease in milk processing. [8]
- d) With the aid of well labelled graph, briefly discuss the changes in the milk components during the different stages of lactation. [8]

QUESTION 2

- a) Describe the factors affecting the stability of milk proteins and their role in dairy processing. [7]
- b) Explain the principles of pasteurization and sterilization in milk. [6]
- c) Compare the effectiveness of different milk preservation techniques, such as refrigeration and fermentation. [5]

QUESTIONS 3

- a) Describe the key steps involved in the industrial production of butter from cream. [8]
- b) Explain the fermentation process in yogurt and Omaere, highlighting the microbial species involved in each fermentation. [8]
- c) Describe the biochemical changes that occur during the aging of cheese. [4]

QUESTION 4

- a) Discuss the differences between CIP and COP methods in dairy equipment sanitation. [8]
- b) Briefly discuss three (3) types of sources of pathogenic microorganisms of concern in milk and milk products. For each source state a specific pathogen. [6]
- c) How do GMP and ISO standards contribute to the efficiency of dairy processing facilities? [5]

QUESTION 5

a) A dairy processor wants to produce 500 kg of 3.5% fat milk by mixing whole milk (4.5% fat) and skim milk (0.1% fat). Calculate the required amounts of each. [8]

b) A batch of ice cream weighing 120 kg before freezing results in 180 kg after freezing. Calculate the overrun percentage. [5]

END OF EXAMINATION