



(The University of choice)

**MASINDE MULIRO UNIVERSITY OF
SCIENCE AND TECHNOLOGY
(MMUST)**

UNIVERSITY EXAMINATIONS

2023/2024 ACADEMIC YEAR

YEAR FOUR SEMESTER ONE EXAMINATIONS

(Main examination)

**BACHELOR OF SCIENCE IN FOOD SCIENCE AND TECHNOLOGY AND
BACHELOR OF SCIENCE IN ANIMAL PRODUCTION**

COURSE CODE: AFT 406.

COURSE TITLE: DAIRY TECHNOLOGY

DATE: 12th Dec, 2023

TIME: 3 – 5 PM

Instructions: This paper consists of 5 questions

Section A is compulsory,

Answer any **THREE** questions from Section B

SECTION A

Question One (25 Marks)

- a) Briefly discuss the parameters that are of importance during the testing of milk at a processing plant. **(6 Marks)**

- b) Define lactose intolerance and hence outline the strategies employed in its management during milk processing **(3 Marks)**

- c) State the main factors responsible for natural variation in milk and enumerate the classification of the changes that may occur in milk **(7 Marks)**

- d) State the unit operations used in milk processing and indicate their applicability **(4 Marks)**

- e) Outline the importance of the following
 - i. Gerber test
 - ii. Titratable acidity test
 - iii. Lactoperoxidase method of milk preservation
 - iv. Sterilization
 - v. Flow diversion valve**(5 Marks)**

SECTION B

Question Two (15 Marks)

- a) Explain the importance of milk pretreatment **(2.5 Marks)**

- b) state the milk pretreatment processes required for the following dairy products
 - i. Market milk
 - ii. Cream products
 - iii. Cheese
 - iv. Evaporated milk**(8 Marks)**

- c) Outline the parameters of the following milk pasteurization processes
 - i. Low temperature holding (**LTH**)
 - ii. The high temperature short time (**HTST**)
 - iii. Ultra-high temperature (**UHT**).**(4.5 Marks)**

Question Three (15 marks)

- a) Differentiate between the following
 - i. Gravity filler and vacuum filler

- ii. Milk sampling and milk testing
 - iii. Ultrafiltration and reverse osmosis
- (3 Marks)**

- b) Outline the steps involved in the production of the following
- i) Yoghurt
 - ii) Pasteurized milk
 - iii) Cheese
 - iv) Powdered milk
 - v) Butter
 - vi) Ghee
- (12 Marks)**

Question Four (15 marks)

- a) Discuss the steps followed in the reception of milk
- (6 Marks)**
- b) Briefly outline the applications of HACCP in the following
- i) Milk pasteurization
 - ii) Milk fermentation
 - iii) Milk sterilization
- (3 Marks)**
- c) Explain the significance of microbes in a dairy processing facility
- (6 Marks)**

Question Five (15 marks)

You have been employed as a manager by a dairy cooperative, and tasked with establishing a milk collection center. Many factors influence the decision on the number of the sites and the suitability of these sites. Discuss the points to be considered in locating the milk collection Centre

(15 Marks)