



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF PURE & APPLIED SCIENCES

UNIVERSITY EXAMINATION FOR:

BACHELOR OF SCIENCE IN FOOD TECHNOLOGY AND QUALITY ASSURANCE YEAR 3

SEMESTER 1

AFS 4305 : DAIRY TECHNOLOGY PAPER 2

SPECIAL/ SUPPLEMENTARY EXAMINATIONS

SERIES: SEPTEMBER 2018

TIME: 2 HOURS

DATE: Pick Date Sep 2018

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **FIVE** questions. Attempt **question ONE (Compulsory)** and any other **TWO** questions
Do not write on the question paper.

Question ONE

- a) Discuss the significance of oxytocin in the dairy industry (**4 marks**)
- b) Give the approximate value for each of the following properties of milk; (**2 marks**)
- i. Lactometer reading
 - i. pH of fresh milk
 - iii. Iso - electric point of milk protein
 - iv. Density of milk
- c) Discuss how milk meant for cheese production is processed (**6 marks**)
- c) Discuss the process of milk homogenization and list **FOUR** forces which effect this process (**6 marks**)
- d) i. Explain why mixed strain starter culture is used in the dairy industry as opposed to single strain (**2 marks**)
- ii. Using specific examples, classify starter culture according to temperature requirements (**4 marks**)
- e) Explain the following terminologies as applied in dairy technology;

i. Overrun (2 marks)

ii. Churning (2 marks)

iii. Bactofugation (2 marks)

Question TWO

Using a stylized plate heat exchanger, discuss the pasteurization process of milk identifying all the units found in it. Justify the location of each equipment in the plant and briefly explain how each works **(20 marks)**

Question THREE

a) Describe the following types of milk;

i. Whole milk (1 mark)

ii. Standardized pasteurized milk (1 mark)

iii. Skim milk (1 mark)

iv. Sterilized milk (1 mark)

b) Discuss the objectives of milk pasteurization (4 marks)

c) Describe the type of emulsion milk forms and explain how this emulsion is stabilized (4 marks)

d) With the aid of a diagram, discuss the processing of U.H.T milk (8 marks)

Question FOUR

i. Discuss the effects of sterilization temperature on milk (4 marks)

ii. Explain how phase inversion occurs during butter processing (6 marks)

iii. Discuss the functions of fat in the diet (10 marks)

Question FIVE

Imagine you are a Dairy Extension Officer in charge of an intensive small scale milk processing plant in your county. You are required to set up a raw milk quality control system. Describe all the raw milk quality control tests that must be carried out to ensure that only good quality milk is received at the factory platform. Indicate the reliability of each test **(20 marks)**

