



MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY

P.O. Box 972 – 60200, Meru – Kenya.

Tel. 020-2069349, 061-2309217, 064-30320. Cell phone:+254 712524293, +254 789151411

Fax: 064-30321

Website: www.mucst.ac.ke Email: info@mucst.ac.ke

University Examinations 2013/2014

THIRD YEAR, SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN FOOD SCIENCE AND TECHNOLOGY AND BACHELOR OF SCIENCE IN FOOD SCIENCE AND NUTRITION

AFS 2310: FUNDAMENTALS OF DAIRY SCIENCE

DATE: DECEMBER 2013

TIME: 2 HOURS

INSTRUCTIONS: Answer question *one* and any other *two* questions.

QUESTION ONE (30 MARKS)

- a) Define the following terms as used in dairy science. (3 Marks)
 - i. Milk
 - ii. Milk plasma
 - iii. Milk serum
- b) Explain the fraudulent behaviour by the milk supplier that can be deduced from the following results of laboratory tests performed on raw milk.
 - i. Lower than normal butter fat content combined with high density. (2 Marks)
 - ii. Lower than normal butter fat content combined with low density. (2 Marks)
 - iii. Lower than normal titratable acidity. (2 Marks)
- c) Though cooling is an important step in maintaining the quality of raw milk, its efficacy is for a limited duration of time, explain why? (4 Marks)
- d) Briefly discuss the formation of lactulose in milk and its significance (6 marks)
- e) Outline 3 important aromatic compounds arising from fermentative transformation of lactose and name the associated products. (6 Marks)
- f) Briefly explain how presence of a high number of proline residues in caseins contributes to their insolubility in water. (3 Marks)
- g) Which volatile compound is responsible for the rancid aroma in milk fat and how does it come about? (2 Marks)

QUESTION TWO (20 MARKS)

- a) Discuss the role of Kenya Dairy Board (KDB) (10 Marks)

- b) Most of the small scale dairy farmers in Kenya practice hand milking. Explain how they can manipulate environmental factors to reduce incidences of mastitis. (10 Marks)

QUESTION THREE (20 MARKS)

- a) Discuss five factors that influence milk composition (15 Marks)
b) Explain why cold raw milk creams faster than as predicted by Stoke's law (5 Marks)

QUESTION FOUR (20 MARKS)

- a) Discuss the natural antimicrobial systems in milk. (12 Marks)
b) Explain how the global physiological status of the cow influences its predisposition to mastitis infection. (8 Marks)