



MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY

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University Examinations 2024/2025

FIRST YEAR FIRST SEMESTER EXAMINATION FOR THE DEGREE OF MASTERS OF SCIENCE IN FOOD SCIENCE AND TECHNOLOGY

AFT 5101: ADVANCED FOOD CHEMISTRY

DATE: DECEMBER 2024

TIME: 3 HOURS

INSTRUCTIONS:

- Answer All Questions

QUESTION ONE (20 MARKS)

- Discuss the chemical processes involved in processing of a protein - based food product of your choice (10 marks)
- Describe any method used in the determination of fiber content in a food sample (10 marks)

QUESTION TWO (20 MARKS)

- Mututho intends to venture into vegetable drying. Given that he intends to sell dried vegetables to hoteliers where they will be rehydrating them before consumption, using a diagram explain a possible relationship between moisture content and water activity of Mututhos's food sample (10 marks)
- Using equations discuss lipid auto-oxidation (10 marks).

QUESTION THREE (20 MARKS)

- Mumbi, intends to extract oil from rapeseeds. Discuss the procedures she is likely to use to yield the oil (10 marks)

- b) Describe enzymatic browning in foods and explain its industrial applications (10 marks).

QUESTION FOUR (20 MARKS)

Mugita, an MSc. FST student in MUST, intends to analyse water activity and moisture content in a food sample. Stepwise, outline the steps he is likely to use (20 marks)

QUESTION FIVE (20 MARKS)

- a) Describe the various analytical methods used to determine the quantities of additives in a food (8 marks)
- b) List any five food contaminants (5 marks)
- c) During red plum jam production Makena used 10 kg pulp, 10 kg sugar, 5 g pectin, 1 g redfood color and 1 mg of nitrite. Calculate the concentration of nitrite in ppm (2 marks)
- d) With the aid of a diagram, discuss the structure of water (5 marks)