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.must.ac.ke Email: info@mucst.ac.ke

University Examinations 2015/2016

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

AFT 3327: INSTRUMENTAL METHODS IN FOOD ANALYSIS

DATE: NOVEMBER 2015 **TIME: 2 HOURS**

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

QUESTION ONE (30 MARKS)

a) Distinguish the following terms:

(i) Electrophoresis. (1 Mark)

(ii) Polarimery. (1 Mark)

(iii) Analyse. (1 Mark)

(iv) Interference (1 Mark)

(v) Refractive index (1 Mark)

b) Explain how the sample to be analyzed using gas-liquid chromatography is prepared. (5 Marks)

c) (i) State the factors to consider when selecting the method for quantitative analysis. (3 Marks)

(ii) Briefly explain the principle of atomic spectroscopy. (5 Marks)

(iii) List four examples of spectroscopic method. (2 Marks)

d) (i)Explain why food sample should be anlysed by food scientist. (4 Marks)

(ii)Explain why band broadening is bad in chromangrophy. (2 Marks)

(iii) Explain what should be done to control it. (4 Marks)

QUESTION TWO (20 MARKS)

(a) Describe the similarities and differences between Atomic Absorption Spectroscopy (AAS) and Atomic Emission Spectroscopy (AES) (10 Marks)

(b) Briefly describe the role for each of the following items associated with AAS and ICP-AES instruments analysis.

(i) Hollow cathode lamp in AAS. (2 Marks)

(ii) Plasma in ICP-AES. (2 Marks)

(iii)Monochromater in ICP-AES (2 Marks)

(iv)Nebulizer in AAS and ICP-AES. (2 Marks)

(v) Atomizer in AAS (2 Marks)

QUESTION THREE (20 MARKS)

(a) Discuss the following terms, clearly stating the differences as used during food analysis.

(i) Chromatogram and chromatograph. (4 Marks)

(ii) Liquid and gas chromatography. (4 Marks)

(iii)Chromatography and spectroscopy. (4 Marks)

(iv)Normal and reversed chromatography. (4 Marks)

(b) Describe four modes of separation in liquid chromatography. (4 Marks)

QUESTION FOUR (20 MARKS)

(a) Briefly explain the principle and instrumentation of gas-liquid chromatography.(10 Marks)

(b) Describe five common spectroscopic methods that are mostly used in food analysis. (10 Marks)