MASINDE MULIRO UNIVERSITY OF
SCIENCE AND TECHNOLOGY
(MMUST)
SCHOOL OF AGRICULTURE, VETERINARY SCIENCES AND TECHNOLOGY
(SAVET)

UNIVERSITY EXAMINATIONS

2023/2024 ACADEMIC YEAR

YEAR FOUR SEMESTER ONE EXAMINATIONS

(Main examination)

BACHELOR OF SCIENCE IN FOOD SCIENCE AND TECHNOLOGY

COURSE CODE: AFS 405

COURSE TITLE: FOOD ANALYSIS

DATE: 1   14th Dec, 2023   TIME: 8 – 10 AM

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) Define spectroscopy **(1 Mark)**

b) Briefly describe the different methods of spectroscopic analyses used in food analysis
(4 Marks)

c) Briefly describe the relationship between pH and acidity, stating how each is determined **(4 Marks)**

d) Crude Ash is a key component of all the foods consumed by human beings.

   i. State the reasons why determination of ash content in food is important **(3 Marks)**
  ii. Differentiate between water soluble and acid insoluble ash
 iii. Differentiate between wet ashing and dry ashing **(4 Marks)**

e) Discuss the principles behind the hedonic system of sensory ranking, which is used in organoleptic testing of foods **(5 Marks)**

f) Briefly discuss the functions of the government regulating agencies in enforcing food standards **(4 Marks)**

SECTION B
Question Two (15 Marks)
a) State the main components of food, briefly outlining their biochemical composition and functions in the human body **(9 Marks)**

b) Describe the significance of the following official methods and standards in food analysis
    i.   AOAC
    ii.   AACC
   iii. Codex alimentarius
   iv. ISO **(2 Marks)**

c) Fill in the following table **(4 Marks)**

Nutrient	Method of analysis
Crude Protein	
Vitamin A	
Vitamin C	
Amino acid	
Moisture	
TSS	
Polarity	

Ash	

Question Three (15 Marks)

a) Given and analytical balance and an oven, outline the procedure you would use to determine the moisture content of a food sample **(6 Marks)**

b) State 3 methods of direct moisture determination and 3 methods of indirect moisture determination **(6 Marks)**

c) Explain the working principle of the following food analysis instruments
   i.   HPLC
   ii.   Gas Chromatograph
   iii. ICP-AES **(3 Marks)**

Question Four (15 Marks)

d) Explain the scenario you would use as a trained panel over an untrained panel during sensory food analysis **(5 Marks)**

a) Having been employed as a quality control manager in a food processing factory, outline and briefly discuss the considerations to follow in establishing a quality control laboratory **(10 Marks)**

Question Five (15 Marks)

a) Briefly discuss the factors that influence the rate of moisture loss from a food sample during drying **(5 Marks)**

b) Briefly explain the principle of electrophoresis and its applications in food analysis **(5 Marks)**

c) Briefly describe how food analysis is related to food and nutrition security **(5 Marks)**