



(University of Choice)

# **MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)**

**UNIVERSITY EXAMINATIONS  
2021/2022 ACADEMIC YEAR  
(MAIN EXAMINATION)**

**SECOND YEAR SECOND SEMESTER EXAMINATIONS  
FOR THE DEGREE OF:  
BACHELOR OF SCIENCE IN FOOD SCIENCE AND TECHNOLOGY**

**COURSE CODE: AFS 204**

**COURSE TITLE: FOOD BIOCHEMISTRY AND HUMAN  
NUTRITION**

**DATE: 25<sup>TH</sup> APRIL 2022**

**TIME: 12.00-2.00PM**

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**Instruction to candidates**

**ANSWER ALL QUESTIONS IN SECTION A AND ANY TWO IN  
SECTION B**

**MMUST observes ZERO tolerance to examination cheating**

*This paper consists of TWO printed pages. Please Turn Over*

## SECTION A : (50MKS) ANSWER ALL QUESTIONS

1. Explain the following characteristics of water that makes it vital in the body (5mks)
  - a) Polarity
  - b) Universal solvent
  - c) High heat capacity
  - d) Cohesion and adhesion
  - e) Buffer
2. Define the following;
  - a. Catabolism
  - b. Anabolism
  - c. Amphibolism (3mks)
3. Using a flow diagram illustrate the convergence of catabolic and anabolic pathways for proteins, carbohydrates and lipids (5mks)
4. Discuss any five factors affecting enzyme activity? (5mks)
5. Briefly discuss the following terminologies
  - a. Glycolysis
  - b. Glycogenesis
  - c. Gluconeogenesis (6mks)
6.
  - a) Name any two hormones involved in glucoregulation and briefly explain how they function (4marks)
  - b) Give any two advantages and two disadvantages of fats in the body (4mks)
7. Explain the three metabolic circumstances through which amino acids undergo oxidative degradation (6mks)
8. Show your understanding of Functional foods Vis-a vis:
  - a) probiotics
  - b) prebiotics (6mks)
9. Describe the regulation of glycogen synthesis. (3mks)
10. Explain three characteristics of enzymes that enable them to be efficient catalysts of biochemical reactions? (3mks)

## SECTION B : (40MKS) ANSWER TWO QUESTIONS

1. Explain the process through which boiled cassava goes through until energy is obtained (20 mks)
2. Explain the **biochemistry** of any five nutritionally related diseases and explain how they can be prevented (20mks)
3. Discuss the following, with support of chemical structures and mentioning the enzymes involved:
  - a) Amino acid breakdown in the body
  - b) Fatty acid catabolism and anabolis (20mks)