



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

**UNIVERSITY EXAMINATIONS**

**2021/2022 ACADEMIC YEAR**

**MAIN EXAMINATIONS  
MAIN CAMPUS/KAKUMA**

**FIRST YEAR SECOND SEMESTER EXAMINATIONS**

**FOR THE DEGREE  
OF**

**BACHELOR OF SCIENCE IN HUMAN NUTRITION AND DIETETICS**

**COURSE CODE: HND 108**

**COURSE TITLE: NUTRITIONAL BIOCHEMISTRY**

**DATE: 25/04/2022**

**TIME: 12.00-2.00PM**

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**INSTRUCTIONS TO CANDIDATES**

SECTION A: ANSWER ALL QUESTIONS [10 MARKS]  
SECTION B: ANSWER ALL QUESTIONS [30 MARKS]  
SECTION C: ANSWER ANY TWO QUESTIONS [30 MARKS]

TIME: 2 Hours

MMUST observes ZERO tolerance to examination cheating

This Paper Consists of 4 Printed Pages. Please Turn Over.

***HND 108: NUTRITIONAL BICHEMISTRY***

## SECTION A: MULTIPLE CHOICE QUESTIONS [10 MARKS]

1. Which of the following biomolecules has the highest respiratory quotient (RQ)
  - A. Carbohydrates
  - B. Proteins
  - C. Lipids
  - D. None of the above
2. Galactosemia may be caused by inherited defects in the following:
  - A. Galactokinase
  - B. Galactose -1- phosphate uridyltransferase
  - C. Uridine Diphosphogalactose -4-Epimerase
  - D. All of the above.
3. Which of the following is **NOT** a phospholipid?
  - A. Phosphatidyl ethanolamine
  - B. Phosphatidylserine
  - C. Phosphatidylglycerol
  - D. 3-phosphocholine
4. Which of the following amino acid skeletons is an intermediate for oxaloacetate?
  - A. Aspartate
  - B. Tyrosine
  - C. Isoleucine
  - D. Glutamate
5. The following enzymes are involved in normal DNA replication. Which one is **NOT**?
  - A. DNA ligase
  - B. Helicase
  - C. Primase
  - D. DNA polymerase II
6. Sucrose is composed of which **TWO** sugars:
  - A. Glucose and Glucose
  - B. Glucose and fructose
  - C. Glucose and galactose
  - D. Fructose and galactose.

7. Hydrolysis of glycoside bond involves:
- A. Breakdown of glycosidic bonds
  - B. Formation of glycosidic bonds
  - C. Formation of hydrogen bond
  - D. Formation of ionic bond
8. A mother of a malnourished child has been instructed to include a complete protein in diet for her child. Which out of the following proteins should be recommended?
- A. Pulses
  - B. Soy protein
  - C. Wheat
  - D. Milk
9. The main site for gluconeogenesis is:
- A. Muscle cells
  - B. Brain cells
  - C. Kidney cells
  - D. Liver cells
10. What are used in animals as a source of quick energy that can be stored in the liver and muscles?
- A. Proteins
  - B. Nucleic acids
  - C. Carbohydrates
  - D. Lipids

**SECTION B: SHORT ANSWER QUESTIONS [30 MARKS]**

11. Explain the relationship between urea excretion and high protein intake [6 Marks]
12. Describe five classes of enzymes and give an example of each [6 Marks]
13. Explain the phases of glycolysis [6 Marks]
14. Describe the primary and tertiary structure of proteins [6 Marks]
15. Describe the importance of carbohydrates in human health [6 Marks]

**SECTION C: LONG ANSWER QUESTIONS [30 MARKS]**

16. Discuss the physiological functions of dietary fibres in human health [15 Marks]
17. Classify the lipids and describe their functions [15 Marks]
18. Explain selenium as non-metallic element in human nutrition. [15 Marks]