



*(University of Choice)*

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

**(MAIN CAMPUSES)**

**UNIVERSITY EXAMINATIONS  
2022/2023 ACADEMIC YEAR**

**FIRST YEAR SECOND END OF SEMESTER EXAMINATIONS**

**FOR THE BACHELOR OF SCIENCE  
IN  
EPIDEMIOLOGY AND BIostatISTICS AND COMMUNITY  
HEALTH AND DEVELOPMENT**

**COURSE CODE: HEM 124 AND HCD 126**

**COURSE TITLE: BIOCHEMISTRY**

**DATE: 14/4/2023**

**TIME: 8.00-10.00 AM**

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**INSTRUCTIONS:**

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

**TIME: 2 Hours**

MMUST observes ZERO tolerance to examination  
cheating

**SECTION A: ATTEMPT ALL THE QUESTIONS IN THIS SESSION (40 MARKS)**

1. Define the following terms (4 marks)
  - a. Hydrogen bond:
  - b. Ketogenesis:
  - c. Isoenzymes:
  - d. Chiral center:
2. The major function of the cell membrane is to regulate passage. Name some of the products that are regulated by the cell membrane (4 marks)
3. Using a chemical structure differentiate between an aldose and a ketose. (4 marks)
4. Name **FOUR (4)** ways in which hormones are classified based on their chemical structure? (4 marks)
5. Giving examples differentiate between? (4 marks)
  - i. Essential and Non-Essential Amino acids
  - ii. Purines and pyrimidines
6. Draw the structure of the following in the nomenclature of fats. (4 marks)
  - i. 18:2 ( $\Delta^{8,14}$ ) the second double bond being a trans
  - ii. 20:2 ( $\Delta^{9,12}$ ) the first double bond being a cis
7. Name the advantages of triacylglycerols? (4 marks)
8. List down **FOUR (4)** roles of nucleotides in the cells (4 marks)
9. Note down the processes of enzyme inhibition? (4 marks)
10. What is the importance of metabolism? (4 marks)

**SECTION B: ANSWER ANY OF THE TWO QUESTIONS IN THIS SESSION (30 MARKS)**

1. a) Use pictorial expression to explain the Michaelis Menten saturation curve. (5 marks)  
b) Discuss **FIVE (5)** ways in which enzymes are classified (10 marks)
2. a) What are the functions of proteins? (5 marks)  
b) What are the steps involved in glucose breakdown? (10 marks)

3. a) How is respiration involved in energy making? (5 marks)
- b) Discuss **FIVE (5)** major features of a cell noting down their functions? (10 marks)

