



(University of Choice)

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

(MAIN CAMPUS)

**UNIVERSITY EXAMINATIONS
2021/2022 ACADEMIC YEAR**

**MAIN EXAM
FOR THE DEGREE
OF
BACHELOR OF SCIENCE IN BIOCHEMISTRY**

COURSE CODE: SBM 323

COURSE TITLE: PROTEIN AND ENZYME II

DATE: MONDAY, 25TH APRIL 2022

TIME: 8:00 – 10:00 A.M.

INSTRUCTIONS TO CANDIDATES

Answer **ALL** questions in section A and **ANY TWO** selected from section B

TIME: 2 Hours

MMUST observes ZERO tolerance to examination cheating

This Paper Consists of 2 Printed Pages. Please Turn Over 

SECTION A: ANSWER ALL THE SHORT ANSWER QUESTIONS (40 MARKS)

1. a) What is a co-factor? (1 mark)
- b) Briefly explain two types of enzyme inhibitors. (4 marks)
2. Explain the properties of allosteric enzyme. (5 marks)
3. Using examples, explain the following;
 - a) Uni- substrate (2.5 marks)
 - b) Bi-substrate reactions (2.5 marks)
4. Outline five advantages of enzyme immobilizations. (5 marks)
5. Explain five uses of enzymes and proteins. (5 marks)
6. Briefly explain five factors that influences substrate-enzyme activity. (5 marks)
7. Explain how structure and conformation influence protein function. (5 marks)
8. The table below shows initial velocity rates at various substrate concentrations for 10 ml hypothetical enzyme catalyze reaction mixture.

[S] (mol/L)	V ($\mu\text{mol}/\text{min}$)
5.0×10^{-3}	0.25
5.0×10^{-4}	0.25
5.0×10^{-5}	0.20
5.0×10^{-6}	0.071
5.0×10^{-7}	0.0096

Use numerical to calculate to answer the following;

- i. K_m of the enzyme (3 marks)
- ii. V_{max} for this concentration of the enzyme (2 marks)

SECTION B (ESSAY QUESTIONS, 30 MARKS)

9. Using illustrations, describe enzyme inhibitors and reversible inhibitors. (15 marks)
10. Enzymes in biological systems may be subjected to controls by covalent modification, discuss. (15 marks)
11. Using relevant examples, describe how enzyme activity are regulated. (15 marks)