



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

**UNIVERSITY EXAMINATIONS**

**2021 /2022 ACADEMIC YEAR**

**MAIN EXAMINATIONS**

**THRD YEAR SECOND SEMESTER EXAMINATIONS**

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

**COURSE CODE: SBM 323**

**COURSE TITLE: ENZYME KINETICS**

**DATE: THURSDAY, 21<sup>ST</sup> APRIL 2022**

**TIME: 8:00 – 10:00 A.M.**

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**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 (SHORT ANSWER QUESTIONS, 40 MARKS)**

1. Explain the significance of the Michaelis Menten Constant ( $K_m$ ) in an enzyme catalysed reaction.  
(5 marks)
2. Outline the factors affecting the velocity of an enzyme catalysed reaction .  
(5 marks)
3. Explain the difference in the Michaelis Menten equation for first Order, second order and zeroth order reactions.  
(5 marks)
4. Explain the following Observation: the oxygen binding curve for Myoglobin is hyperbolic while that of Haemoglobin is sigmoidal.  
(5 marks)
5. Discuss the effects of the various methods of enzyme immobilization on the activity of the enzyme.  
(5 marks)
6. Explain the differences between growth associated and non growth associated products produced during the cell growth cycle.  
(5 marks)
7. Explain the models of enzyme activity accounts for group and absolute specificity of enzymes  
(5 marks)
8. Outline the differences between a structured and unstructured kinetic models used to account for cell growth  
(5 marks)

**SECTION B (ESSAY QUESTIONS, 30 MARKS)**

9. Discuss the growth kinetics associated with the various growth phases of a bacteria in a batch culture.  
(15 marks)
10. Discuss the effects of the various classes of inhibitors on the kinetic behaviour of enzymes.  
(15 marks)
11. Discuss the mechanism of action of double substrate enzymes.  
(15 marks)