



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF PURE & APPLIED SCIENCES

UNIVERSITY EXAMINATION FOR:

BACHELOR OF TECHNOLOGY IN INDUSTRIAL MICROBIOLOGY AND
BIOTECHNOLOGY

ABT 4207: PROTEIN & ENZYME I **SPECIAL/ SUPPLEMENTARY PAPER**
SPECIAL/SUPPLEMENTARY EXAMINATION

SERIES: SEPTEMBER 2018

TIME: 2 HOURS

DATE: Pick Date Sep 2018

Instructions to Candidates

You should have the following for this examination

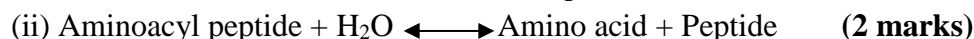
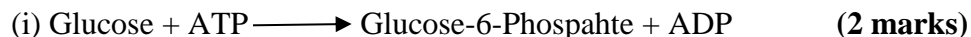
-Answer Booklet, examination pass and student ID

This paper consists of **FIVE** questions. Attempt question ONE (Compulsory) and any other TWO questions.

Do not write on the question paper.

Question ONE

- a) Give the systematic names and the first three digit in the E.C classification of the following catalyzing reactions



- b) (i) Define the quaternary protein structure. (2 marks)
(ii) Describe two examples of molecules which exist in the above (i) protein structure. (2 marks)

- c) State two functions of the following co-factors
- (i) Pyridoxal Phosphates (2 marks)
 - (ii) Flavin nucleotides (FAD, FMN) (2 marks)
 - (iii) Zinc ions (2 marks)
 - (iv) Coenzyme A (2 marks)
- d) Give three characteristic types of reversible enzyme inhibitors. (6 marks)

Question TWO

- a) Describe the structure and steps in the formation of mature collagen fibres. (4 marks)
- b) Describe the structure and function of the following proteins.
- (i) Keratin (4 marks)
 - (ii) Hemoglobin (4 marks)
 - (iii) Myoglobin (4 marks)
 - (iv) Cytochrome (4 marks)

Question THREE

- (a) Explain various models that have been proposed to explain the substrate specificity of enzymes and Enzyme-Substrate (E-S) complex. (5 marks)
- (b) Describe with an illustration of graphs to determine different types of inhibitor. (12 marks)
- (c) Explain three applications of enzyme inhibitors. (3 marks)

Question FOUR

- a) Explain the mechanism of enzyme catalysis. (4 marks)
- b) With an illustration of an example, describe the following four major rate enhancement processes in the mechanism of catalysis in the formation of Enzyme-Substrate complex.
- (i) Strain or distortion (4 marks)
 - (ii) Covalent catalysis (4 marks)
 - (iii) Acid-base catalysis (4 marks)
 - (iv) Proximity (4 marks)

Question FIVE

- a) Name four types of irreversible enzyme inhibitors (2 marks).
- b) Mention their mode of action of the inhibitors named in (a) above. (4 marks)
- c) Penicillin is as effective bactericidal drug. Discuss

(14 marks)