



Technical University of Mombasa

Faculty of Applied and Health Sciences

DEPARTMENT OF PURE AND APPLIED SCIENCES

UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF
TECHNOLOGY IN INDUSTRIAL MICROBIOLOGY AND BIOTECHNOLOGY
BTMBT10M

ABT 4409: INDUSTRIAL ENZYMES

SEMESTER EXAMINATION

DECEMBER 2013 SERIES

2 HOURS

Instructions to candidates:

This paper consist of **FIVE** questions

Answer question **ONE** (compulsory) and any other **TWO** questions

QUESTION ONE

a) Define the following terminologies

- (i) Pullulanases
- (ii) Endocellolases
- (iii) Protopectin
- (iv) Pectin lyases

(@ 0.5marks)

b) Give **THREE** examples of microorganisms that are sources of hyperthermophilic α -glucosidases **(3marks)**

c) State any **FIVE** advantages of using microorganisms as sources of industrial enzymes **(5marks)**

d) Highlight any **FIVE** important parameters for selection of detergent proteases **(5marks)**

- e) Explain how you can obtain improved strains of microorganisms for industrial enzymes. **(2marks)**
- f) Describe the THREE types of Pullulanases **(3marks)**
- g) Describe FIVE types of cellulases based on the types of reaction catalysed **(10marks)**

QUESTION TWO

Discuss any TEN potential applications of pectinolytic enzymes **(20marks)**

QUESTION THREE

Explain cheese production under the following steps :

- (i) Coagulation step
- (ii) Curd manipulation
- (iii) Maturation or ripening

(20marks)

QUESTION FOUR

- a) Discuss the production of white wine **(15marks)**
- b) Explain how proteases are used in photographic industry **(5marks)**

QUESTION FIVE

Discuss any FIVE industrial applications of cellulases **(20marks)**