



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 4409: INDUSTRIAL ENZYMES

SPECIAL/SUPPLEMENTARY EXAMINATION

SERIES: SEPTEMBER 2018

TIME: 2 HOURS

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) Outline the role of xylanases in baking process (4 marks)
- b) Explain enzyme concentration by using thermal methods (6 marks)
- c) Name any one enzyme produced naturally by the following microorganisms;
- i. *Bacillus* (1 mark)
 - ii. *Aspergillus* (1 mark)
 - iii. *Trichoderma* (1 mark)
 - iv. *Streptomyces* (1 mark)
- d) Give one industrial application for the following;
- i. Alkaline protease (1 mark)
 - ii. Alkaline keratinase (1 mark)
 - iii. Amylase (1 mark)
 - iv. Laccase (1 mark)
 - v. Lipase (1 mark)

- e) Outline the biochemical role of enzymes in toothpastes and dentifrice (5 marks)
f) Outline the mechanism of renneting in cheese making (6 marks)

Question TWO

Using the specific synthesis rate and specific growth rate kinetics, describe the physiological optimization for enhanced enzyme production (20 marks)

Question THREE

Explain the biochemical role of proteinases in the following;

- i. Meat processing (15 marks)
ii. Fish processing (5 marks)

Question FOUR

With an aid of a diagram, describe the main steps of corn wet milling process in the production of High fructose corn syrup (HFCS) (20 marks)

Question FIVE

Discuss the natural isolate screening method for enzyme bioprospecting (20 marks)