



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF PURE & APPLIED SCIENCES

UNIVERSITY EXAMINATION FOR:

BTMB

ABT 4406: RECENT ADVANCES IN INDUSTRIAL BIOTECHNOLOGY

END OF SEMESTER EXAMINATION

PAPER 2

SERIES: APRIL 2016

TIME: 2 HOURS

DATE: Pick Date May 2016

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. Define the following terms.
- | | |
|-----------------------|--------|
| i. Biofuel | 1 mark |
| ii. Affinity sensor | 1 mark |
| iii. Catalytic sensor | 1 mark |
| iv. Metabolic sensor | 1 mark |
- b. State the Locard's Exchange Principle. 2 marks
- c. Describe the nature's antisense system in *E. coli*. 4 marks
- d. Outline the economic importance of algae as a source of biofuel. 6 marks

- e. Describe the use of nanomaterials in sports. 6 marks
- f. Explain the rationale behind the use of gene therapy to treat patients suffering from *beta*-Thalassemia. 8 marks

Question TWO

Describe the stages of CRISPR-Cas defense. 20 marks

Question THREE

- a) Using illustrations, describe antisense technology. 10 marks
- b) Explain the potential of nanomaterials in nanoremediation and water treatment. 10 marks

Question FOUR

Discuss gene augmentation and inhibition therapies. 20 marks

Question FIVE

- a. Explain air and water concerns with Biofuels. 7 marks
- b. Describe the use of antibodies or immunosensors in immunoassays. 7 marks
- c. Giving examples, describe the transient evidence in crime scene. 6 marks