

PAPER II



TECHNICAL UNIVERSITY OF MOMBASA

School of Applied and Health Sciences
DEPARTMENT OF PURE AND APPLIED SCIENCES

UNIVERSITY EXAMINATION FOR:
BACHELOR OF TECHNOLOGY IN MICROBIOLOGY AND
BIOTECHNOLOGY

AAB 4401: APPLIED MICROBIAL ECOLOGY
SPECIAL/SUPPLEMENTARY EXAMINATION

SERIES: JULY 2025 SERIES

TIME: 2 HOURS

DATE: JULY 2025

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

- Describe direct leaching approach used by some bacteria in biomining (6mks)
- Name any five biological components that can be used in a biosensor (5mks)
- List down five optimal conditions for biogas production (5mks)
- Describe the use of aerated pile method of sanitary landfills (5mks)
- Discuss the symbiotic relationship between ectomycorrhizal fungi and trees (5mks)

- f. Using a diagram, show the arrangement of biosensor components (4mks)

Question TWO

Explain the use of the following biological molecules in biosensors: -

- i) Enzymes (10mks)
- ii) Antibodies (10mks)

Question THREE

- a) Describe the mode of infection of nuclear polyhedrosis viruses. (5mks)
- b) Discuss *Paenibacillus popliae* under the following sub-headings:
 - i) Mode of action (7mks)
 - ii) Application of the bacteria (5mks)
 - iii) Spread of the bacteria after application (3mks)

Question FOUR

- a. List the advantages of using biogas (5mks)
- b. Describe biogas production using batch digester. (15mks)

Question FIVE

Describe the following stages of penicillin production:

- a. Growth of the fungus (4mks)
- b. Preparation of the growth media (6mks)
- c. Separation (3mks)
- d. Recovery (4mks)
- e. Modification (3mks)