



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 4316: PLANT CELL TECHNOLOGY

END SEMISTER EXAMINATION

SERIES: DECEMBER, 2024

TIME: 2 HOURS

DATE: Dec., 2024

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) Justify the use of auxins as a nutrient media component (4 marks)
- b) State the limitations of in vivo thermotherapy method of virus elimination (4 marks)
- c) Explain the means to overcome browning of medium during tissue culture (5 marks)
- d) Highlight limitations of micro-propagation (5 marks)
- e) Discuss thawing as a step in *in vitro* cryopreservation of plant cells (6 marks)
- f) Explain the applications of callus cultures (6 marks)

Question TWO

Discuss;

a) Meristematic tissues (10 marks)

b) Batch cultures (10 marks)

Question THREE

Discuss the following plant tissue culture laboratory areas;

a) Glassware washing and storage (10 marks)

b) Culture room (10 marks)

Question FOUR

Discuss the following methods of free-viral plant production;

a) In vivo thermotherapy (12 marks)

b) Cryotherapy (8 marks)

Question FIVE

a) Using illustrations, describe the pathways involved in cultured pollen grain development (10 marks)

b) Explain the approaches for ploidy levels determination in anther cultured plants (10 marks)