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

SPECIAL/SUPPLEMENTARY EXAM

SERIES: JULY, 2025

TIME: 2 HOURS

DATE: JUL., 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

a) Highlight advantages of pollen culture over anther culture (3 marks)

b) Explain bead technique of protoplast culture (5 marks)

c) State the functions of collenchymatous cells (4 marks)

d) Describe the THREE steps involved in somatic embryogenesis (6 marks)

e) classify non-zygotic embryos (6 marks)

f) Why would you prefer micropropagation over conventional plant propagation methods? (6 marks)

Question TWO

a) Explain cell viability tests performed during single cell culture (12 marks)

b) Discuss plantlets transfer to soil during meristem culture (8 marks)

Question THREE

a) Discuss *in vitro* techniques for haploid plants production (12 marks)

b) Describe slow growth culture method of germplasm preservation (8 marks)

Question FOUR

a) Explain the causes of aneuploidy in callus and suspension cultures (10 marks)

b) Explain the molecular events associated with somaclonal variants formation (10 marks)

Question FIVE

Discuss plant tissue culture nutrient medium (20 marks)