



# TECHNICAL UNIVERSITY OF MOMBASA

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FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF PURE & APPLIED SCIENCES

## UNIVERSITY EXAMINATION FOR:

BACHELOR IN INDUSTRIAL MICROBIOLOGY AND BIOTECHNOLOGY

ABT 4302: CELL, TISSUE AND ORGAN CULTURE PAPER II

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.**

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### Question ONE

- Describe the basic components of nutrient medium used in plant tissue culture (6 marks)
- Explain the protocol for callus culture (6 marks)
- State SIX importance of single cell culture (6 marks)
- Give FOUR advantages of axillary shoot proliferation over conventional method of propagation (4 marks)
- Explain the formation of cybrids from protoplast fusion (3 marks)
- What are the factors affecting organogenesis? (5 marks)

### Question TWO

- Describe the various stages of shoot meristem culture process (16 marks)
- Highlight the means to overcome vitrification in meristem culture (4 marks)

### **Question THREE**

Discuss somatic hybridization technique under the following heads:

- i) Protoplast fusion (12 marks)
- ii) Selection of hybrid cells (8 marks)

### **Question FOUR**

- a) Using suitable diagrams describe the processes involved in somatic embryogenesis (12 marks)
- b) Discuss the applications of somaclonal variations (8 marks)

### **Question FIVE**

- a) Discuss the factors to be considered when selecting a cell line (14 marks)
- b) Contrast the properties of finite cell lines and continuous cell lines (6 marks)