



*(Knowledge for Development)*

**KIBABII UNIVERSITY**  
**UNIVERSITY EXAMINATIONS**  
**2020/2021 ACADEMIC YEAR**

**FOURTH YEAR FIRST SEMESTER**  
**SPECIAL /SUPPLEMENTARY**  
**EXAMINATIONS**

**FOR THE DEGREE OF BACHELOR OF SCIENCE IN AGRICULTURE  
AND BIOTECHNOLOGY**

**COURSE CODE: SBL 413**

**COURSE TITLE: PLANT CELL, TISSUE AND ORGANIC  
CULTURE**

**DATE: 13<sup>TH</sup> JANUARY 2021 TIME: 8.00 – 10.00 AM**

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**INSTRUCTIONS TO CANDIDATES**

Answer Question one (1) and any other two (2) Questions. Question one is compulsory and carries 30 marks, the other Questions carry 20 marks each.

TIME: 2 Hours

This paper consists of 3 printed pages. Please Turn Over



**KIBU observes ZERO tolerance to examination cheating**

### **QUESTION ONE**

- a) Define the term plant tissue culture. (4 Marks)
- b) Describe the various forms of sclereids. (4 Marks)
- c) State four characteristics of parenchyma cells. (4 Marks)
- d) Explain four measures to be taken for maintaining asepsis during tissue culture. (4 Marks)
- e) Enumerate two advantages of in-vitro culture methods. (2 Marks)
- f) Highlight the main constituents of a culture medium. (4 Marks)
- g) Describe the structural composition of the apical meristem. (4 Marks)
- h) Distinguish between primary growth and secondary growth in plants. (4 Marks)

### **QUESTION TWO**

- a) Explain three techniques for culturing plant in-vitro. (12 Marks)
- b) Describe four factors influencing somaclonal variation. (8 Marks)

### **QUESTION THREE**

- a) Compare on the four characteristics between Parenchyma, Sclerenchyma and Collenchyma tissues. (12 Marks)
- b) Outline the main steps involved in culturing the plant tissues. (8 Marks)

### **QUESTION FOUR**

- a) Explain five advantages of Plant Tissue Culture. (10 Marks)
- b) Describe five patterns exhibited in the secondary cell walls of the xylem vessels. (10 Marks)

### QUESTION FIVE

a) Briefly write short notes on the following:-

- i. Lateral meristems (6 Marks)
- ii. Micropropagation (4 Marks)
- iii. Somatic embryogenesis (4 Marks)

b) Outline the basic facilities found in standard tissue culture laboratory.

(6 Marks)