(University of Choice)

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

MAIN CAMPUS

UNIVERSITY EXAMINATIONS

2021/2022 ACADEMIC YEAR

MAIN

THIRD YEAR SECOND SEMESTER EXAMINATIONFOR THE DEGREE OF

BACHELOR OF SCIENCE IN AGRICULTURE AND BIOTECHNOLOGY

COURSE CODE: SBN 302

COURSE TITLE: PLANT TISSUE AND ORGAN CULTURE

DATE: 29TH APRIL, 2022 **TIME: 8-10AM**

INSTRUCTION TO CANDIDATES

Answer all questions in section A and 2 questions from section B
TOTAL MARKS= 70
TIME: 2 hours

MMUST observes ZERO tolerance to examination cheating

This paper consists of 2 printed pages. Please Turn Over

Section A: Answer ALL Questions (30 Marks)

Question One

Define the following terms **(10 Marks)**

i. Totipotency,
ii. Explant,
iii. Somatic embryogenesis,
iv. Organogenesis,
v. Callus,
vi. Stock solution,
vii. Micropropagation,
viii. Tissue culture,
ix. Macronutrients and Micronutrients.

Question Two

a) List the components used in nutrient media and their function **(10Marks)**

b) Briefly describe how the following materials are sterilized in the tissue culture laboratory:

i. Water,
ii. Explant,
iii. paper towels,
iv. pipettes,
v. conical flasks,
vi. forceps,
vii. nutrient media,
viii. antibiotics,
ix. laminar flow bench,
x. Petri dishes.

(10 Marks)

Section B Answer TWO Questions (40 Marks)

Question Three

a) List the importance of tissue culture in crop improvement **(10 Marks)**
b) Why is the adoption of tissue culture technology slow in Kenya? **(5 Marks)**
c) How can the problem in (b) above be addressed? **(5 Marks)**

Question Four

a) Differentiate between macronutrients and micronutrients used in nutrient media **6Marks)**
b) List four vitamins used in nutrient media**(4 Marks)**
c) List the steps used in the preparation of nutrient media **(10 Marks)**

Question Five

a) Differentiate between protoplast culture and somaclonal variation **(2 Marks)**
b) List the uses of protoplast culture **(5 Marks)**
c) What are the limitations of protoplast culture **(3 Marks)**
d) Prepare stock solution for 1mg/lml measuring up to 100ml **(5 Marks)**
e) Explain c1v1 =c2v2 **(5 Marks)**