(*Knowledge for Development*)

KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS 2017/2018 ACADEMIC YEAR

FOURTH YEAR 1ST SEMESTER MAIN EXAMINATION

FOR THE DEGREE OF BACHELOR OF SCIENCE BIOTECHNOLOGY

COURSE CODE: SBL 413

COURSE TITLE: PLANT CELL, TISSUE AND ORGAN CULTURE

DATE: 18/12/2017 **TIME:** 8.00-10.00 AM

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 2 printed pages. Please Turn Over

Question 1

a. Define the following: (4 Marks)

   i) Totipotence.

   ii) Plant tissue culture.

b. State the advantages of tissue culture over intact plants (5 Marks)

c. Differentiate between organogenesis and embryogenesis. (4 Marks)

d. Briefly describe the commonly used tissue culture techniques. (4 Marks)

e. Briefly explain protoplast isolation as a technology for the improvement of plants. (5 Marks)

f. Briefly explain the functions of tissue culture. (4 Marks)

g. "Micropropagation is the art and science of multiplying plants in vitro." Outline the basic micropropagation stages. (4marks)

Question 2

Discuss the general technique, methodology and application of cell and callus culture (20 Marks)

Question 3

Describe the organization of plant tissue culture laboratory and state the rules that are followed to ensure safety in the laborarory. (20 Marks)

Question 4

a. Using a well-labelled diagram describe the structure and function of a plant cell.

b. Outline the different types of tissues found in plants.

(20 Marks)

Question 5

Discuss somaclonal variation and its application to plant breeding

(20 Marks)