



JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF AGRICULTURAL AND FOOD SCIENCES

**SECOND YEAR SECOND SEMESTER UNIVERSITY EXAMINATION FOR THE DEGREE OF
BACHELOR OF SCIENCE IN HORTICULTURE**

2017/2018 ACADEMIC YEAR

REGULAR

COURSE CODE: AAB 3226

COURSE TITLE: CELL AND TISSUE CULTURE AND TRANSGENIC TECHNOLOGIES

EXAM VENUE:

STREAM: BSc. (Horticulture)

DATE:

EXAM SESSION:

TIME: 2 HOURS

Instructions:

- 1. Answer ALL questions in section A and ANY other 2 Questions in section B.**
- 2. Candidates are advised not to write on question paper.**
- 3. Candidates must hand in their answer booklets to the invigilator while in the examination room.**

SECTION A [30 MARKS]

Answer ALL questions from this Section.

1. Describe three methods that can be used for organ culture. (3 marks)
2. State three advantages of tissue culture over intact plants (3 marks)
3. Describe the three major steps of plant tissue culture (3 marks)
4. Describe three sterilization techniques used in plant tissue culture and identify the type of material used to sterilize each of them. (3 marks)
5. Describe three methods that can be used to suppress cell division in tissue culture cell (3 Marks)
6. Outline three advantages of micropropagation over conventional propagation methods (3 marks)
7. Define the terms differentiation, de-differentiation and re-differentiation (3 marks)
8. Give three differences between direct and indirect embryogenesis (3 Marks)
9. During transformation, several components of the Ti plasmid enable effective transfer of the genes of interest into the plant cells. Explain (3 marks)
10. Identify three criteria that should be accomplished in order to ensure a successful initiation of callus culture (3 marks)

SECTION B [40 MARKS]

Answer ANY TWO Questions from this Section

- 11 i. Draw and describe the various components of Ti plasmid vector (6 marks)
ii. Describe the steps of *Agrobacterium*-mediated Plant Transformation Process (14marks)
- 12 Discuss the various components of a tissue culture medium. (20 marks)
- 13 Discuss the approaches for germplasm conservation of plant genetic materials. (20 marks)
- 14 Discuss the three aspects of somatic hybridization in plants (20 marks)