JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF AGRICULTURAL AND FOOD SCIENCES

UNIVERSITY EXAMINATION FOR DEGREE OF BACHELOR OF SCIENCE IN HORTICULTURE

SECOND YEARSECOND SEMESTER 2013/2014 ACADEMIC YEAR

REGULAR

COURSE CODE: AAB 3226

COURSE TITLE: Cell and Tissue Culture and Transgenic Technologies

EXAM VENUE:LR 3 **STREAM: BSc (Horticulture)**

DATE:11/12/14 **EXAM SESSION: 2.00 -4.00 PM**

TIME: 2.00 HOURS

Instructions:

1. **Answer ALL question in Section A (compulsory) and ANY TWO questions in Section B.**
2. **Candidates are advised not to write on the question paper.**
3. **Candidates must hand in their answer booklets to the invigilator while in the examination room.**

SECTION A [30 MARKS]

1. (a) List the four (4) types of plant tissue culture technique. [2marks]
   (b) What is totipotency? Why is it important to tissue culture? [2marks]
   (c) What is an explant? [2marks]
   (d) Define the term callus. [2marks]
   (e) List the ingredients of a tissue culture medium. [2marks]

2. Explain in detail the four steps of micropropagation. Explain why each step is necessary. [10 marks]

3. Any laboratory in which tissue culture techniques are performed regardless of specific purpose contains a number of work areas. Discuss the work areas, detailing what each area entails. [10 marks]

SECTION B [40 MARKS]

4. Discuss the role of growth regulators in various tissue culture applications. [20 marks]

5. Explain the following molecular techniques. Give clear examples.

   (a) Polymerase Chain Reaction. [6 marks]
   (b) Gel electrophoresis. [6 marks]
   (c) Molecular markers. [8 marks]

6. Discuss ways of minimizing contamination in a tissue culture laboratory. [20 marks]