JOARDI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY
SCHOOL OF AGRICULTURAL AND FOOD SCIENCES
UNIVERSITY EXAMINATION FOR DEGREE OF BACHELOR OF SCIENCE IN
HORTICULTURE
SECOND YEAR SECOND 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]