



**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY  
SCHOOL OF AGRICULTURAL AND FOOD SCIENCES**

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

**3<sup>RD</sup> YEAR 1<sup>ST</sup> SEMESTER 2017/2018 ACADEMIC YEAR**

**REGULAR**

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**COURSE CODE: AAB 3412**

**COURSE TITLE: BIOTECHNOLOGY IN HORTICULTURE**

**EXAM VENUE: LR 7**

**STREAM: BSc. Horticulture**

**DATE: 18/12/17**

**EXAM SESSION: 2.00 – 4.00PM**

**TIME: 2 HOURS**

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**Instructions:**

- 1. Answer ALL the questions in section A and any TWO 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.**
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## **SECTION A [30 MARKS]**

**Answer ALL questions from this Section.**

Q1. (a) List the 4 types of plant tissue culture (2marks)

(b) State the central dogma and briefly explain it. (2marks)

(c) What is a molecular marker? (2marks)

(d) Define the term genetic engineering (2marks)

(e) List the ingredients of a tissue culture medium (2marks)

Q2. Explain in detail the four steps of micropropagation. Explain why each step is necessary (10 marks)

Q3. Discuss genetic engineering, its goals and applications in agriculture (10 marks)

## **SECTION B [40 MARKS]**

**Answer any TWO QUESTIONS in this Section.**

Q4. Discuss roles of application of biotechnology in agriculture (20 marks)

Q5. Discuss the role and application of different growth regulators in various tissue culture applications (20 marks)

Q6. Write short notes on the following subjects:

(a) Polymerase Chain Reaction (7 marks)

(b) Gel electrophoresis (6 marks)

(c) Vector dependent gene transfer (7 marks)