



**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE  
AND TECHNOLOGY**

**UNIVERSITY EXAMINATIONS 2012/2013**

**1<sup>ST</sup> YEAR 1<sup>ST</sup> SEMESTER EXAMINATIONS FOR THE DEGREE  
OF BACHELOR OF SCIENCE (HORTICULTURE AND SOIL  
SCIENCE)**

**(REGULAR)**

**COURSE CODE: APT 3111**

**COURSE TITLE: AGRICULTURAL BOTANY**

**DATE: 24/4/2013                      TIME: 9.00-11.00AM**

**DURATION: 2 HOURS**

**INSTRUCTIONS**

- 1. This paper contains TWO sections.**
- 2. Answer ALL questions in section A (Compulsory) and ANY other Two questions in section B.**
- 3. Write all answers in the booklet provided.**

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**SECTION A: ANSWER ALL 3 QUESTIONS (Total Points = 40)**

- Q1. a). List two limitations of standard optical microscopy (2 marks)
- b). Explain the significance of staining as a botanical technique. (2 marks)
- c). State the difference between the following
- i) Transmission Electron Microscope (TEM) and a Scanning Electron Microscope (SEM) (3 marks)
  - ii) Dermal and vascular tissue (3 marks)
- Q2. Explain the following
- a) Stain mordant (1 marks)
  - b) Totipotency (1 marks)
  - c) GMO (2 mark)
  - d) Parthenocarpic fruit (1 mark)
  - e) Double fertilization (2 marks)
  - f) Senescence (1 marks)
  - g) Ethylene (2 marks)
- Q3. a). Explain a herbarium and four uses of an herbarium in botanical studies.(4 marks)
- b). Outline the significance of a botanical garden (4marks)
- Q4. Make detailed labeled drawings of the following:
- a) Stem morphology (4 marks)
  - b) Anatomy of an entire leaf cross-section (4 marks)
  - c) General flower (4 marks)

**SECTION B: ANSWER ANY TWO QUESTIONS (30 MARKS)**

- Q5. a) Discuss the relevance of Agricultural Botany to Agricultural production (5 marks)
- b) State the origin, uses and classification maize and soya bean (10 marks)
- Q6. Explain the process of secondary growth in the stems of woody angiosperms with the help of schematic diagrams. What is its significance? (15marks)
- Q7. Discuss ecological adaptations of plants organs to drought, flooding and predation because of climate change (15 points)