



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

**SCHOOL OF AGRICULTURAL AND FOOD SCIENCES**

**FOURTH YEAR SPECIAL UNIVERSITY EXAMINATION FOR THE  
DEGREE OF BACHELOR OF SCIENCE IN AGRICULTURAL AND  
EXTENSION EDUCATION, BACHELOR OF SCIENCE IN  
HORTICULTURE, BACHELOR OF SCIENCE IN ANIMAL SCIENCE AND  
BACHELOR OF SCIENCE IN SOIL SCIENCE**

**2019/2020 ACADEMIC YEAR**

**RESIT EXAMS**

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**COURSE CODE: APT 3111**

**COURSE TITLE: Agricultural Botany**

**EXAM VENUE:**

**STREAMS: BSc. AGED, BSc. Horticulture,  
BSc. Animal Science, BSc. Soil science**

**DATE:**

**EXAM SESSION:**

**TIME: 2 HOURS**

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**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. Define the following terms as used in cell biology.
  - a) Phenotypic plasticity (2 Marks)
  - b) Cell differentiation (2 Marks)
2. State TWO functions of each of the three primary tissues in plants. (6 Marks)
3. Explain the FOUR major areas of investigation in plant morphology. (4 Marks)
4. Differentiate between the following terms as used in plant botany.
  - a) Prokaryotic and eukaryotic organisms (2 Marks)
  - b) Homology and convergence (2 Marks)
  - c) Parenchyma and collenchyma cells (2 Marks)
  - d) Monoecious and dioecious plants (2 Marks)
5. State the role played by each of the following parts of the plant root.
  - a) Apical meristem (1 Mark)
  - b) Casparian strip (1 Mark)
6. Name the primary meristems which divide into the following tissues during primary growth of roots.
  - a) Dermal tissue (1 Mark)
  - b) Ground tissue (1 Mark)
  - c) Vascular tissue (1 Mark)
7. Highlight THREE major differences between mitosis and meiosis processes of cell division. (3 Marks)

## SECTION B [40 MARKS]

**Answer ANY TWO questions from this Section.**

8. Discuss the structural, functional and ecological adaptations of the following plants in their respective habitats;
  - a) Hydrophytes (10 Marks)
  - b) Halophytes (10 Marks)
9. Using an appropriate diagram, explain the process of secondary growth in stem. (20 Marks)
10.
  - a) Explain the functions of each of the following cell types (12 Marks)
    - i. Parenchyma cells
    - ii. Collenchyma cells
    - iii. Sclerenchyma cells
    - iv. Cortex cells
  - b) Using a well labeled diagram, explain the functions of the internal features of a leaf blade. (8 Marks)