



JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF AGRICULTURAL AND FOOD SCIENCES

**FOURTH YEAR SECOND SEMESTER UNIVERSITY EXAMINATION FOR THE
DEGREE OF BACHELOR OF SCIENCE IN AGRICULTURE EDUCATION
AND EXTENSION**

2016/2017 ACADEMIC YEAR

REGULAR

COURSE CODE: AHT 3221

COURSE TITLE: Plant Breeding

EXAM VENUE:

STREAM: BSc. Agric Educ. & Ext.

DATE:

EXAM SESSION:

TIME: 2 HOURS

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.

- 1 State and explain briefly the three subdivisions in sexual reproduction also known as amphimixis (5marks)
- 2 Explain how a plant breeder can acquire genetic variability in a plant population (5 marks)
- 3 Explain how qualitatively inherited traits can be distinguished from quantitatively inherited traits. Use diagrams where necessary (5 marks)
- 4 With aid of a diagram, explain the four types of selection differentiated by choice of mating system and the choice of original population chosen as parents (5 marks)
- 5 State and explain three major things a breeder should consider while breeding for resistance (5 marks)
- 6 Backcrossing is repeated crossing to one parent. Explain the importance of backcrossing and how it is conducted (5 marks)

SECTION B [40 MARKS]

Answer any TWO QUESTIONS from this Section.

- Q3. (a) Discuss how genetic modification differs from conventional plant breeding? (10 marks)
(b) Explain the molecular basis of mutations with suitable examples. (10 marks)
- Q4. Discuss the role of tissue culture in plant breeding highlighting the major advantages and disadvantages offered by in vitro techniques (20 marks)
- Q5. (a) Discuss the mechanisms that have evolved in plants which promotes natural cross pollination (10 marks)
- (b) Define heterosis or hybrid vigour and clearly state three criteria used in plant breeding to accurately specify the magnitude of the heterosis effect (10 marks)