

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

**EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE IN
AGRICULTURAL EDUCATION AND EXTENSION**

AGRI 322: PLANT BREEDING

STREAMS:

TIME: 2 HOURS

DAY/DATE: WEDNESDAY 11/12/2019

11.30 A.M – 1.30 P.M

INSTRUCTIONS

SECTION A: ANSWER ALL QUESTIONS (30 MARKS)

1. Describe two major roles of cytoplasmic male sterility genes (CMS) in breeding. [4 marks]
- (a) Describe epistasis and pleiotropy and their effects in plant breeding. [4 marks]
2. Describe vivipary and agamospermy apomixes in crop plants. [7 marks]
3. Describe the possible benefits of biotechnology as a modern plant breeding technique. [7 marks]
4. Explain the term emasculation and describe how it is carried out. [8 marks]

SECTION B ;ANSWER ANY TWO QUESTIONS (40 MARKS)

5. (a) Describe the standard procedure of starting a plant breeding project. [10 marks]
- (b) Describe five mechanisms that maintain variation in species. [10 marks]
6. (a) Describe ex situ germplasm conservation method and state its benefits. [6 marks]
- (b) Describe the five types of domesticated plants that can be a source of variability for a breeder's use. [14 marks]

7. (a) Using a punnet square, show the genotype and phenotype for disease resistance from an $Rr \times rr$ cross following mendelian inheritance principles. [8 marks]
- (b) Describe the mass selection breeding method in self pollinating crops. [12 marks]
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