

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS
**EXAMINATION FOR THE AWARD OF DEGREE OF DOCTORATE OF PHILOSOPHY
IN BOTANY**
BOTA 932: PLANT BREEDING AND GENETICS
STREAMS: Ph.D
TIME: 3 HOURS
DAY/DATE: THURSDAY 06/12/2018
2.30 P.M – 5.30 P.M

INSTRUCTIONS

- Answer any three questions.
- Use calculators and statistical tables is allowed
- Do not write on the question paper

1. Describe how you can incorporate a gene controlled by a recessive gene in a tomato line using backcross breeding method. [20 marks]
2. (a) Discuss the strategies used in molecular breeding. [10 marks]
(b) Detail a scheme of genomic selection in a given breeding program, giving advantage of genomic selection over marker assisted selection. [10 marks]
3. A legume breeder at Chuka University conducted a study on heritability of resistance to angular leaf spot (*phaeoisariopsis griseola*) in common bean (*pheseolus vulgaris L.*) genotypes and obtained the following results. (Table 1)

Table 1: number of plants affected by the disease

Variety	Rep 1	Rep 2	Rep 3	Rep 4
CU2	22	8	8	10
CU92	12	8	6	12
CU4	16	12	8	22
CU10	28	54	16	36
CU104	14	8	18	28

Use the above data to calculate the heritability of angular leaf spot.

4. The overall scheme of quantitative and qualitative inheritance is the same but there are some difference in the way they are expressed. Discuss. [20 marks]
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