

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

**FIRST YEAR EXAMINATION FOR THE AWARD DEGREE OF
MASTER OF SCIENC IN PLANT BREEDING**

AGRI 821: BREEDING METHODS**STREAM:** M.Sc. (Y1S1)**TIME:** 3HOURS**DAY/DATE:** THURSDAY 9/04/2020**11.30 A.M - 230 P.M.****INSTRUCTIONS**

- Answer question **ONE** and **ANY TWO** other questions.
- Use calculator and mathematical tables is allowed.
- Do not write anything on the question paper.

QUESTION ONE (20 MARKS): COMPULSORY

(a) Discuss heritability with respect to breeding methods. (3 Marks)

(b) A legume breeder at Chuka University conducted a study on heritability of resistance to angular leaf spot (*Phaeoisariopsisgriseola*) in common bean (*Pheseolus vulgaris* L.) genotypes and got 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. (17 Marks)

QUESTION TWO (20 MARKS)

Describe incorporation of a resistant to a given disease controlled by a recessive gene in a tomato line.

QUESTION THREE (20 MARKS)

(a) Discuss the strategies for molecular breeding. (10 Marks)

(b) Detail a scheme of genomic selection (GS) in a given breeding program, giving advantage of GS over marker assisted selection. (10 Marks)

QUESTION FOUR (20 MARKS)

The overall scheme of quantitative and qualitative inheritance is same but there are some differences in the way they are expressed. Discuss.

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