UNIVERSITY OF SWAZILAND

FINAL EXAMINATION

PROGRAMME: BACHELOR OF SCIENCE IN AGRONOMY YEAR 3
HORTICULTURE YEAR 3

COURSE CODE: CP 301

TITLE OF PAPER: CROP BREEDING

TIME ALLOWED: TWO (2) HOURS

INSTRUCTIONS: ANSWER ANY FOUR (4) QUESTIONS

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QUESTION 1

Explain fully, the following terms and their importance in crop breeding:

a) Recurrent parent [5 Marks]
b) Sporophytic self incompatibility [5 Marks]
c) Non additive gene action [5 Marks]
d) Heterosis [5 Marks]
e) *Bt* gene [5 Marks]

[25 Marks]

QUESTION 2

Define recurrent selection. Describe the different methods of recurrent selection and how they are used in the improvement of breeding populations.

[25 marks]

QUESTION 3

Describe how the segregating materials are handled using the pedigree method of plant breeding. Your discussion should include the criteria of choosing the parents for the initial cross and how breeders can reduce the selection period.

[25 Marks]

QUESTION 4

Define marker assisted selection (MAS). What are the advantages of MAS compared to conventional plant breeding methods? Discuss the current obstacles for developing countries in adopting MAS in their breeding programs.

[25 Marks]

QUESTION 5

Supposed that you are a sweet potato breeder and that you are required to use induced mutation to create variation within the clones. **List** the types of mutation agents you can use and how the segregating mutants are handled during selection. What are the main barriers in breeding asexually propagated crops? **[25 Marks]**