UNIVERSITY OF SWAZILAND

SUPPLEMENTARY EXAMINATION PAPER

PROGRAMME: B.Sc. AGRONOMY 3 AND B.Sc. HORTICULTURE 3.

COURSE CODE: CP 301

TITLE OF PAPER: CROP BREEDING

TIME ALLOWED: TWO (2) HOURS

INSTRUCTIONS: ANSWER ANY FOUR (4) QUESTIONS.

DO NOT OPEN THIS PAPER UNTIL PERMISSION HAS BEEN GRANTED BY THE CHIEF INVIGILATOR

QUESTION 1

Write short notes on the following crop breeding terms:

a) Gametophytic apomixes (5 Marks)
b) Progeny test (5 Marks)
c) Transgressive segregation (5 Marks)
d) General combining ability (5 Marks)
e) MAS (5 Marks)

[25 MARKS]

QUESTION 2

What were the contributions of the following scientists in crop breeding?

a) Norman Borlaug (1914-2009) (5 Marks)
b) N.I. Vavilov (1887-1943) (5 Marks)
c) G.H. Shull (1874-1954) (5 Marks)
d) David Fairchild (1869-1954) (5 Marks)
e) W.L. Johannsen (1857-1927) (5 Marks)

[25 MARKS]

QUESTION 3

Discuss the different systems of homomorphic self incompatibility in crop plants with examples of crops under each type. What is the significance of self incompatibility in crop breeding?

[25 MARKS]

QUESTION 4

a) Give the generalized steps in breeding by mass selection for purification of an existing variety. (13 Marks)
b) What are the main differences between mass and pure line selection methods? (12 Marks)

[25 MARKS]

QUESTION 5

a) Crop breeders take advantage of heterosis in producing superior hybrid varieties. Define heterosis and discuss its genetic bases. (13 Marks)
b) Define a hybrid variety. List and describe the different types of hybrids that can be developed from a given set of inbred lines. (12 Marks)

[25 MARKS]