



UNIVERSITY OF SWAZILAND

FINAL EXAMINATION PAPER

**PROGRAMME: BACHELOR OF SCIENCE IN AGRONOMY YEAR THREE
BACHELOR OF SCIENCE IN HORTICULTURE YEAR THREE**

COURSE CODE: CP 301

TITLE OF PAPER: CROP BREEDING

TIME ALLOWED: TWO (2) HOURS

**INSTRUCTIONS: ANSWER QUESTION 1 AND ANY OTHER THREE (3)
QUESTIONS**

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

44

QUESTION 1

Explain the following terms

- a) Genotype
- b) Phenotype
- c) Polyploidy
- d) Secondary centre of origin
- e) Autogamy (give four (4) examples)
- f) Apomixes
- g) Meiosis
- h) Dioecy (and an example of a crop)
- i) Monoecy (and an example of a crop)
- j) Protogyny (and an example of a crop)
- k) Protandry (and an example of a crop)
- l) Phenotypic variance
- m) Genotypic variance
- n) Hybrid
- o) Synthetic variety
- p) Plant biotechnology
- q) Transgenic plant
- r) Inbred
- s) Test cross
- t) Monogenetic trait

(40 Marks)

45

QUESTION 2

- a) State and explain the five (5) floral mechanisms that facilitate self-pollination
(7 Marks)
- b) State and explain the five (5) floral mechanisms that facilitate cross pollination
(7 Marks)
- c) State five (5) genetic implications of self-pollination
(6 Marks)
(20 Marks)

QUESTION 3

- a) Differentiate between qualitative traits and quantitative traits
(9 Marks)
- b) State and explain the three (3) components of genetic variation
(6 Marks)
- c) State and explain the two (2) types of heritability
(5 Marks)
(20 Marks)

QUESTION 4

- a) Define and explain hybrid breeding and state (with illustrations) the different types of hybrids
(9 Marks)
- b) State the advantages of synthetic varieties
(5 Marks)
- c) Make a comparison between conventional plant breeding and modern biotechnology
(6 Marks)
(20 Marks)

QUESTION 5

- a) What is a molecular marker?
(2 Marks)
- b) Give five (5) examples of molecular markers
(5 Marks)
- c) Explain marker assisted selection
(8 Marks)
- d) State the advantages of marker assisted selection
(5 Marks)
(20 Marks)