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

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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)

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)