GWANDA STATE UNIVERSITY

FACULTY OF NATURAL RESOURCES MANAGEMENT AND AGRICULTURE

DEPARTMENT OF CROP SCIENCE

PROGRAMME: BSc HORTICULTURE AND CROP PRODUCTION

NHC 1203: PLANT BIOLOGY

FINAL EXAMINATION

JUNE 2024

This examination paper consists of 3 pages,

Time Allowed: Three (3) Hours

Total Marks: 100

Special Requirements: pen, pencil, ruler.

Examiner's Name: **DUBE B**

Instructions

1. Answer **ALL** questions in Section A
2. Answer any **THREE (3)** questions in Section B

Mark allocation

Question	**Marks**
Section A	40
Section B	60
Total attainable marks	100

SECTION A: Answer **ALL** questions.

Question 1

a. Explain the functions of the following plant cell organelles and components
   i) cell wall (**4 marks)**
   ii) endoplasmic reticulum **(3 marks)**
   iii) vacuole **(3 marks**)

b. i) Define leaf abscission **(2 marks)**
   ii) Explain four (4) significant roles of leaf abscission in crop production **(8 marks)**

Question 2

a) Distinguish parthenocarpy from apomixes **(4 marks)**
b) Describe the features of a flower that favours cross pollination **(6 marks)**
c) Explain the process of double fertilization in plants **(6 marks)**
d) State four advantages of vegetative propagation in crop production **(4 marks**)

SECTION B: Answer any THREE questions.

Question 3

a) Distinguish between the epigeal and the hypogeal germination **(4 marks)**
b) i) Define seed dormancy. **(2 marks)**
   For the following types of seed dormancy, explain two (2) techniques that can be used to overcome them
   i) Physical dormancy **(2 marks)**
   ii) Mechanical dormancy **(2 marks)**
   iii) Chemical dormancy **(2 marks)**
   iv) Endogenous dormancy **(2 marks)**
c) Explain two (2) effects of moisture stress in plants **(2 marks)**
d) Define vernalisation **(2 marks)**

Question 4

a) Define seed viability (**1 mark)**
b) Describe three (3) methods used to test seeds for viability **(9 marks)**
c) With the aid of examples, explain, the significance of five (5) plant growth regulators in crop production **(10 marks)**

Question 5

a. **)** Describe five (5) useful properties of water that enable it to perform its functions in plants **(10 marks)**
b. As a crop scientist, advise the farmers on the five (5) characteristics of crops to grow in arid regions. (**10 marks)**

Question 6

a) Describe five (5) features of a leaf that enable it to photosynthesize. **(10 marks)**
b) Explain the five (5) factors affecting the rate of photosynthesis. **(10 marks)**