

GWANDA STATE UNIVERSITY



FACULTY OF NATURAL RESOURCES MANAGEMENT AND AGRICULTURE

DEPARTMENT OF HORTICULTURE AND CROP PRODUCTION

PROGRAMME: BSc HORTICULTURE AND CROP PRODUCTION

NHC 2101: CROP ECOLOGY AND PHYSIOLOGY

FINAL EXAMINATION

APRIL– JUNE 2024

This examination paper consists of 3 pages,

Time Allowed: Three (3) Hours

Total Marks: 100

Special Requirements: pen, 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

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SECTION A: Answer ALL questions.

Question 1

- a) Define the following terms
 - i) Relative Growth rate (2 marks)
 - ii) Development (2 marks)
 - iii) Photoperiod (2 marks)
 - iv) Leaf area index. (2 marks)
 - v) Net Assimilation rate (2 marks)

- b) Explain five (5) parameters that can be used as growth measurement. (10 marks)

Question 2

- a) Describe the five (5) factor that affect growth of crops. (10 marks)
- b) Explain the significance of the following genes in the growth of the plant
 - i) DNA (2 marks)
 - ii) Structural genes (2 marks)
 - iii) Regulatory genes (2 marks)
 - iv) Operational genes (2 marks)
- c) Define stress physiology (2 marks)

SECTION B: Answer any THREE questions.

Question 3

- a) Name two (2) abiotic stressors of plants. (2 marks)
- b) Describe the relationship between light interception and crop canopies in agriculture
 - i) Leaf inclination and extinction coefficient (4 marks)
 - ii) Crop architecture and crop growth rate (4 marks)
 - iii) Describe any five (5) disadvantages of plant growth analysis measurements. (10 marks)

iii)

Question 4

Give a detailed outline of causes to postharvest losses in tomatoes (*Solanum lycopersicum*) and prescribe possible solutions. **(20 marks)**

Question 5

- a) Giving examples describe the effects of drought stress on dry matter partitioning. **(6 marks)**
- b) Suggest any five measures that could be adopted by the farmers to counter the negative effects of climate on crop production **(10 marks)**
- c) Differentiate between a source and a sink. **(4 marks)**

Question 6

- a) Describe the growth stages of a wheat plant. **(10 marks)**
- b) Explain the morphological symptoms of heat stress on plants **(10 marks)**