



GWANDA STATE UNIVERSITY
FACULTY OF LIFE SCIENCES
DEPARTMENT OF CROP SCIENCE
BACHELOR OF SCIENCE HONOURS DEGREE IN CROP SCIENCE

LCS4201 CROP PHYSIOLOGY II
SECOND SEMESTER EXAMINATION
JUNE 2023

This examination paper consists of 3 pages

Time Allowed: 3 hours
Total Marks: 100
Special Requirements: None
Examiner's Name: Mr J.Dube

INSTRUCTIONS

1. Answer **ALL QUESTIONS** in SECTION A
2. Answer **TWO QUESTIONS** in SECTION B

MARK ALLOCATION

QUESTION	MARKS
SECTION A	60
SECTION B	40
TOTAL ATTAINABLE MARKS	100

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SECTION A: ANSWER ALL QUESTIONS IN SECTION A

QUESTION ONE

Define the following terms from a crop physiology perspective:

- a) Plant growth [1]
- b) Meristematic cells [1]
- c) Fresh weight [1]
- d) Photosynthesis [1]

QUESTION TWO

- e) Explain reasons behind adoption of any exemplified C4 plant in the province of Matabeleland South. [4]
- f) Discuss any ways of cereal plants adaptation to harsh climatic conditions [4]

QUESTION THREE

- a) Describe the importance of photo-morphogenesis in crop development [4]
- b) Describe five symptoms of high temperature stress in plants [5]
- c) Outline THREE (3) advantages and THREE (3) disadvantages of using growth analysis in assessing plant growth [6]
- d) Explain the importance of leaf area duration in determining -grain yield. [2]

QUESTION FOUR

- a) Describe the importance of following plant growth analysis indices
 - i. LAD [2]
 - ii. CRG [2]
 - iii. HI [2]
- a) Describe any four factors that affect plant growth and yield. [4]
- b) With the aid of a well labelled diagram, describe the phases during sigmoid growth curve. [7]

QUESTION FIVE

- a) Citing relevant examples, distinguish between a source and a sink [4]
- b) Qualify the notion that: A plant organ may function as a source at first and later become a sink depending on the stages of plant growth and development [4]
- c) Describe the effects of Heat Stress on photosynthesis [6]

SECTION B: ANSWER TWO QUESTIONS IN SECTION B

QUESTION SIX

Discuss the impact of climate change on crop production [20]

QUESTION SEVEN

- a) Describe assimilate partitioning during the following crop growth stages:
 - i. Vegetative growth stage [5]
 - ii. Flowering growth stage [5]
 - iii. Grain filling stage [5]
- b) Outline mechanisms developed by plants to counter drought stress. [5]

QUESTION EIGHT

- a) Discuss the apoplastic and symplastic phloem loading and unloading [10]
- b) With the aid of a well labelled diagram, fully describe the three major types of meristematic tissues found on the plant stem based on their position [10]

QUESTION NINE

Give a detailed outline of any 10 influences (biotic or abiotic) to plant health which impact on crop physiological development and suggest the most ideal corrective measures that has to be adopted by farmers in order to sustain crop productivity [20]

END OF EXAMINATION PAPER

