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

SEPTEMBER 2021

This examination paper consists of 3 pages

Time Allowed: **3 hours**

Total Marks: **100**

Special Requirements: **None**

Examiner's Name: **Dr. T Goche**

INSTRUCTIONS

1. Answer **all** questions in Section A

2. Answer **TWO (2)** 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 THIS SECTION

1. a) Explain the effects of light intensity on photosynthesis. [5]

   b) List five factors that affect the amount of light intercepted by a plant canopy. [5]

   c) What is meant by 'light compensation point'?. Explain the difference in light compensation points between shade-tolerant and shade-intolerant pants. [5]

   d) Explain the importance of leaf area duration (LAD) to plant grain yield. [5]

2. a) Explain how the amount of light received by a plant varies between:

   i) upper leaves   ii) intermediate leaves   iii) lower leaves [8]

   b) Give the formula for calculating leaf area index (LAI). [2]

   c) Describe the direct and indirect methods of measuring leaf area index (LAI). [10]

3. a) Giving examples where necessary, distinguish between;

   i) erectophile and planophile leaf orientations [5]

   ii) sink strength and sink capacity [5]

   b) Describe any instance where the source becomes the sink during plant growth and development. [5]

   d) Using a specific example, describe the effect of fruit removal to the plant source-sink balance. [5]

SECTION B: ANSWER ANY TWO QUESTIONS IN THIS SECTION

4. Discuss the growth stages most sensitive to moisture stress in maize (*Zea mays*).   [20]

5. Give a detailed outline of techniques used for minimising postharvest losses in tomatoes (*Solanum lycopersicum*).   [20]

6. Giving specific examples, discuss the 'smart canopy' concept in relation to crop leaf orientation.   [20]

END OF EXAMINATION PAPER