



UNIVERSITY OF ESWATINI

MAIN EXAMINATION PAPER

PROGRAMME: B. SC. IN AGRONOMY YEAR TWO & YEAR THREE
B. SC. IN AGRICULTURAL EDUCATION YEAR TWO & YEAR THREE
B. SC. IN AGRICULTURAL EXTENSION YEAR TWO & YEAR THREE
B. SC. IN HORTICULTURE YEAR TWO & YEAR THREE

COURSE CODE: CPR203

TITLE OF PAPER: CROP PHYSIOLOGY

TIME ALLOWED: TWO (2) HOURS

INSTRUCTIONS: ANSWER ALL QUESTIONS

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QUESTION 1

a) Identify and explain the mechanisms of action of two synthetic growth regulators that are used to promote growth and developmental processes in plants

(8 marks)

b) Identify and explain the mechanisms of action of two synthetic growth regulators that are used to inhibit growth and developmental processes in plants

(8 marks)

c) Plants use the sun's energy to obtain water from the soil. Discuss the validity or otherwise of this statement.

(9 marks)

[25 marks]

QUESTION 2

Using appropriate examples, explain the following:

- a) Net photosynthesis (5 marks)
- b) Channel proteins versus transporter proteins (5 marks)
- c) Two roles of circadian rhythms (5 marks)
- d) Monocarpic species (5 marks)
- e) Adenosine triphosphate (5 marks)

[25 Marks]

QUESTION 3

Plants are not slaves to their physical environment. Clearly identify and explain morphological, anatomical and physiological adaptive mechanisms that plants use for their survival. Give two mechanisms for each category.

[25 Marks]

QUESTION 4

- a) CAM plants close their stomata during the day. How do they acquire their CO₂ and water for photosynthesis?
(5 marks)

- b) Explain, giving two reasons, why C4 plants exhibit better photosynthetic efficiency than C3 plants.
(5 marks)

- c) Explain the difference between crop growth rate and relative growth rate. In your answer, give the appropriate formula and units for each.
(5 marks)

- d) Explain, what the following indices are used for. In your answer, give the appropriate formula and units for each index.
 - i. Growing degree days (5 marks)
 - ii. Base saturation (5 marks)

[25 Marks]