



MACHAKOS UNIVERSITY

University Examinations for 2021/2022 Academic Year

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

FOURTH YEAR SECOND SEMESTER EXAMINATION FOR

BACHELOR OF EDUCATION (SCIENCE)

SBT 403: ECOPHYSIOLOGY

DATE: 6/12/2021

TIME: 2.00-4.00 PM

INSTRUCTIONS

1. Answer Question 1 (compulsory) and **any two** questions in Section B.
2. Use clean well labelled diagrams wherever appropriate.

SECTION A (COMPULSORY)

QUESTION ONE (30 MARKS)

- a) Define the following terms (3 marks)
 - a. Photosynthetically Active Radiation
 - b. Plant Photomorphogenesis
 - c. Phytochrome
- b) Describe any three types of soil water (3 marks)
- c) Explain any two classes of photosynthetic pigments in higher plants (3 marks)
- d) Distinguish between respiratory quotient and respiratory substrate (3 marks)
- e) Describe any three components of soil water potential (3 marks)
- f) Outline any three physiological responses of plants to drought stress (3 marks)
- g) Distinguish source organs from sink organs in plants (3 marks)
- h) Explain any three environmental factors that affect dry matter production (3 marks)
- i) Briefly describe any three ways in which halophytes deal with excessive salts in succulent tissues (3 marks)
- j) Differentiate epigeal germination from hypogeal germination (3 marks)

SECTION B: ANSWER ANY OTHER TWO QUESTIONS

QUESTION TWO (20 MARKS)

Discuss the C₃ Cycle in plants

QUESTION THREE (20 MARKS)

Discuss the rate limiting steps in glycolysis

QUESTION FOUR (20 MARKS)

Discuss the adaptations of the phloem tissue

QUESTION FIVE (20 MARKS)

Discuss seed dormancy