



MACHAKOS UNIVERSITY

University Examinations 2019/2020 academic Year

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

FOURTH YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF SCIENCE IN BIOLOGY

SBT 403: ECOPHYSIOLOGY

DATE: 19/01/2021

TIME: 8.30-10.30 AM

INSTRUCTIONS

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

SECTION A

QUESTION ONE COMPULSORY (30 MARKS)

- a) Briefly explain the meaning following terms
 - i. field capacity (1.5 marks)
 - ii. permanent wilting percentage (1.5 marks)
- b) Briefly discuss two forces that contribute to the ascent of sap in plants (3 marks)
- c) Explain how the plant root hairs are adapted to absorption of water and mineral salts from the soils (3 marks)
- d) Describe the components of water potential (3 marks)
- e) Briefly describe the influence of solar radiation to plants (3 marks)
- f) Distinguish between Transpiration and guttation (3 marks)
- g) Outline the differences between C3 and C4 Plants (3 marks)
- h) Briefly discuss the adaptation of plants to water stress (3 marks)
- i) Explain the difference between seed vigor and seed viability (3 marks)

j) Briefly discuss anaerobic respiration in plants

(3 marks)

SECTION B

QUESTION TWO (20 MARKS)

Using a well illustrated diagram describe Non-cyclic electron flow

QUESTION THREE (20 MARKS)

Discuss ten factors that influence the opening and closing of stomata

QUESTION FOUR (20 MARKS)

Discuss seed dormancy

QUESTION FIVE (20 MARKS)

Discuss the mechanisms of adaptation of plants to salinity