



# 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

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## 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