



MACHAKOS UNIVERSITY

University Examinations 2018/2019

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

FOURTH YEAR FIRST SEMESTER EXAMINATION FOR

BACHELOR OF EDUCATION (SCIENCE)

SBT 403: ECOPHYSIOLOGY

DATE: 7/5/2019

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) Describe the following terms
 - i. Field capacity (1.5 marks)
 - ii. Permanent wilting percentage (1.5 marks)
- b) Describe two forces that contribute to the ascent of sap in plants (3 marks)
- c) Explain how root hair cells are adapted to absorption of water and mineral salts from the soils (3 marks)
- d) Describe the components of water potential in plants (3 marks)
- e) Explain briefly how solar radiation influence plants (3 marks)
- f) Distinguish between transpiration and guttation (3 marks)
- g) Outline the differences between C₃ and C₄ Plants (3 marks)
- h) Explain the adaptation of plants to water stress (3 marks)
- i) State the difference between seed vigor and seed viability (3 marks)
- j) Describe oxidative phosphorylation (3 marks)

SECTION B

QUESTIONS TWO (20 MARKS)

- a) Distinguish between cyclic and non-cyclic electron flow (5 marks)
- b) Illustrate and describe non-cyclic electron flow (15 marks)

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 salt tolerance in plants