



MACHAKOS UNIVERSITY

University Examinations 2022/2023 academic Year

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

THIRD YEAR SECOND SEMESTER EXAMINATION FOR

BACHELOR OF EDUCATION (SCIENCE)

BACHELOR OF SCIENCE (BIOLOGY)

SBT 309: ADVANCED PLANT ECOLOGY

DATE:

TIME:

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) Describe the characteristics of organisms that exhibit type III survivorship curve? (3 marks)
- b) Distinguish between density -dependent mortality and density- dependent fecundity factors in population regulation. (3 marks)
- c) Outline two theories to support the self-thinning mechanism in plants (4 marks)
- d) Differentiate between scramble and contest competition (3 marks)
- e) Differentiate between direct and indirect gradient analysis (3 marks)
- f) Outline the Berger-Parker index (D) of diversity (3 marks)
- g) Differentiate between the fundamental and the realized niche (3 marks)
- h) Describe three types of ordination used in ecological analysis (3 marks)
- i) Explain point-centred- quarter method in vegetation Ecology (3 marks)
- j) Describe two strategies employed by plants to reduce predation (2 marks)

SECTION B: ANSWER ANY TWO QUESTIONS

QUESTION TWO (20 MARKS)

Discuss Hutchinson's concept of niche overlap

QUESTION THREE (20 MARKS)

Discuss inter-specific competition as a model of population interaction

QUESTION FOUR (20 MARKS)

Discuss three concepts used by ecologists to describe the nature of vegetation

QUESTION FIVE (20 MARKS)

- a) Discuss vegetation sampling methods (15 marks)
- b) Describe the concept of landscape management in a named landscape unit. (5 marks)