



MACHAKOS UNIVERSITY
University Examinations for 2021/2022 Academic Year
SCHOOL OF PURE AND APPLIED SCIENCES
DEPARTMENT OF BIOLOGICAL SCIENCES
FOURTH YEAR FIRST SEMESTER EXAMINATION FOR
BACHELOR OF EDUCATION (SPECIAL NEEDS EDUCATION)
BACHELOR OF EDUCATION (SCIENCE)
SBT 408: FOREST ECOLOGY

DATE: 31/8/2022

TIME: 11.00-1.00 PM

INSTRUCTIONS

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

SECTION A

QUESTION ONE (30 MARKS)

- a) Explain the effects of climate change and atmospheric carbon dioxide concentration on biomass accumulation? (3 marks)
- b) Explain *ex situ* conservation of indigenous forests (4 marks)
- c) List three possible national policy statements on forests (3 marks)
- d) Briefly discuss formation of red earths in the humid tropics (4 marks)
- e) Differentiate between natural and artificial forests (2 marks)
- f) Define the term “forest”{ according to Forest Resource Assessment (FRA), 2015 (2 marks)
- g) Describe the compensation by forest trees to edaphic limitations on their growth (3 marks)
- h) Outline three functions of a forest inventory and analysis program (3 marks)
- i) Briefly discuss the structure and floristic composition of Lianas (3 marks)
- j) Outline the effects of forest fires on tree diversity and regeneration potential (3 marks)

SECTION B

QUESTION TWO (20 MARKS)

Discuss the phases of growth and development of a forest stand

QUESTION THREE (20 MARKS)

Discuss the classification of forests based on latitude

QUESTION FOUR (20 MARKS)

- a) Describe the structure and composition of the Amazon basin tropical rainforest (12 marks)
- b) Describe the effect of natural and human disturbances on aiding the aggressiveness of invasive plant species in a forest ecosystem (8 marks)

QUESTION FIVE (20 MARKS)

Discuss sustainable forest management