



# 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 EDUCATION (SCIENCE)

BACHELOR OF SCIENCE (BIOLOGY)

SBT 408: FOREST ECOLOGY

DATE: 19/01/2021

TIME: 2.00-4.00 PM

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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 (COMPULSORY)

### QUESTION ONE (30 MARKS)

- |    |     |   |           |
|----|-----|---|-----------|
| a) | i   | What are the characteristics of forest ecosystems?  | (2 marks) |
|    | ii  | Explain endemism in reference to Eastern Arc Mountains.   | (2 marks) |
|    | iii | Why are forests different at continental level?   | (1 mark)  |
| b) | i   | What is vegetation zonation? Contrast vegetation of the tropics to the temperate region.                  | (2 marks) |
|    | ii  | The climate of the tropical rainforest is hot and wet, describe the adaptations of trees to this climate. | (3 marks) |
|    | iii | Outline the basic sampling designs used to analyze forest structure and composition.                      | (4 marks) |
| c) | i   | Describe impact of forest degradation on the forest ecosystem.  | (1 mark)  |
|    | ii  | State the limitations of protected areas in conserving biodiversity                                       | (2 marks) |
|    | iii | Explain the role of tree crown in a forest ecosystem.   | (1 mark)  |

- d) i Describe the effects of disturbance on forest dynamics. (2 marks)
- ii What is the extent and classification of forest resources in Kenya? (4 marks)
- iii Outline some of the issues facing forest health in East Africa. (3 marks)
- e) i Discuss the three main approaches used to study forest ecosystems. (3 marks)
- ii Describe nutrient cycling in forest ecosystem. (1 mark)
- iii State the key issues to be considered in EIA in the implementation of Forest policy in Kenya. (3 marks)

**SECTION B (ANSWER ANY TWO QUESTIONS)**

**QUESTION TWO (20 MARKS)**

- a) Discuss the classification of forests according to latitude. (10 marks)
- b) Outline the vegetation zonation of East African mountains, case of Mt. Kenya. (10 marks)

**QUESTION THREE (20 MARKS)**

- a) Describe mangrove adaptations to their environment. (10 marks)
- b) Explain the remote sensing techniques used to analyze forest extend and condition. (10 marks)

**QUESTION FOUR (20 MARKS)**

- a) Outline the threats facing the conservation of forests in Kenya. (10 marks)
- b) Discuss the general characteristics of tropical forests. (10 marks)

**QUESTION FIVE (20 MARKS)**

- a) Describe the abiotic environment of forest ecosystems. (10 marks)
- b) State the overall goal of the National forest policy and discuss its objectives and strategies. (10 marks)