



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

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)

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|----|-----|---|-----------|
| 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 extent 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)