



MACHAKOS UNIVERSITY

University Examinations for 2018/2019 Academic Year

SCHOOL OF ENVIRONMENT AND NATURAL RESOURCES MANAGEMENT

DEPARTMENT OF ENVIRONMENTAL SCIENCES

..... YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR
BACHELOR IN ENVIRONMENTAL STUDIES (RESOURCE CONSERVATION)

ERC 104: PRINCIPLES OF BIOLOGY

DATE:

TIME:

INSTRUCTIONS:

Answer question ONE and any other TWO questions

QUESTION ONE (30 MARKS)

- a) Distinguish with examples between food chain and food web. (10 marks)
- b) Explain why ecosystems that are seldom disturbed are likely to have more species diversity than ecosystems that undergo moderate disturbance. (10 marks)
- c) Give reasons for huge energy losses as energy flows from one trophic level to the next. (10 marks)

QUESTION TWO (20 MARKS)

- a). State the two fundamental laws of thermodynamics. (10 marks)
- b). Explain why in a natural ecosystem there are more grass eating rabbits than rabbit eating foxes. (10 marks)

QUESTION THREE (20 MARKS)

Describe the following concepts

- a) Biosphere. (4 marks)
- b) Consumers. (4 marks)

- c) Ecology. (4 marks)
- d) Ecological Pyramid. (4 marks)
- e) Nitrification and Denitrification. (4 marks)

QUESTION FOUR (20 MARKS)

Describe the characteristics of the following biomes and explain what would happen if they are converted to agricultural farms.

- a) Tropical rain forests (10 marks)
- b) Savannah grassland (10 marks)

QUESTION FIVE (20 MARKS)

Discuss the hydrological cycle processes and how it is disrupted by human activities.