



MACHAKOS UNIVERSITY

University Examinations for 2018/2019 Academic Year

SCHOOL OF ENVIRONMENT AND NATURAL RESOURCES MANAGEMENT

DEPARTMENT OF ENVIRONMENTAL SCIENCES

FIRST YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR IN ENVIRONMENTAL SCIENCE

ERC 104: PRINCIPLES OF BIOLOGY

DATE: 26/7/2019

TIME: 11.00-1.00 PM

INSTRUCTIONS:

Answer question ONE and any other TWO questions

QUESTION ONE

- a) Give reasons for huge energy losses as energy flows from one trophic level to the next. (10 marks)
- b) 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 TWO

Discuss the hydrological cycle processes and how it is disrupted by human activities. (20 marks)

QUESTION THREE

- 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)

QUESTION FOUR

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

- 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)