



# MACHAKOS UNIVERSITY

University Examinations for 2020/2021 Academic Year

SCHOOL OF ENVIRONMENT AND NATURAL RESOURCES MANAGEMENT

DEPARTMENT OF ENVIRONMENTAL SCIENCES

FIRST YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF ENVIRONMENTAL STUDIES (ENVIRONMENTAL RESOURCE  
CONSERVATION)

ERC 104: PRINCIPLES OF BIOLOGY

DATE: 25/3/2021

TIME: 2.00-4.00 PM

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## INSTRUCTIONS:

Answer question ONE and any other TWO questions

### QUESTION ONE (30 MARKS)

Giving examples, briefly explain the following concepts.

- a) Ecosystem and Ecological niche. (10 marks)
- b) Food chain and Food web (10 marks)
- c) Nitrification and Denitrification (10 marks)

### QUESTION TWO (20 MARKS)

- a) Describe the energy flow process in an ecosystem. (15 marks)
- b) Explain why the amount of available energy in an ecosystem declines as one moves up the trophic level. (5 marks)

### QUESTION THREE (20 MARKS)

- a) Explain the principle of competitive exclusion (10 marks)
- b) Discuss how organisms deal with competition in an ecosystem. (10 marks)

**QUESTION FOUR (20 MARKS)**

- a) Describe human activities that are likely to disrupt the carbon cycle. (10 marks)
- b) Discuss the environmental impacts predicted to result from an impairment of the carbon cycle (10 marks)

**QUESTION FIVE (20 MARKS)**

- a) Explain the processes that drive the hydrological cycle. (10 marks)
- b) Discuss the human impacts on the hydrological cycle. (10 marks)