

UNIVERSITY OF SWAZILAND

FINAL EXAMINATION PAPER 2005

TITLE OF PAPER: ECOLOGY

COURSE CODE: B304

TIME ALLOWED: THREE HOURS

- INSTRUCTIONS:
1. ANSWER ANY FOUR QUESTIONS
  2. EACH QUESTION CARRIES TWENTY FIVE (25) MARKS
  3. ILLUSTRATE YOUR ANSWERS WITH LARGE AND CLEARLY LABELLED DIAGRAMS WHERE APPROPRIATE

SPECIAL REQUIREMENTS:  
NONE

THIS PAPER IS NOT TO BE OPENED UNTIL PERMISSION HAS  
BEEN GRANTED BY THE INVIGILATORS

**QUESTION 1**

- (a) Outline the main characteristic features of lotic systems. [5 marks]
- (b) Describe the various biozones of a lentic fresh-water body indicating with examples the group(s) of organisms found in each zone. [12 marks]
- (c) Briefly explain the occurrence and the significance of nitrates and phosphates in aquatic ecosystems. [10 marks]
- [TOTAL MARKS = 25]

**QUESTION 2**

- (a) Explain the following terms: population and ecosystem. [4 marks]
- (b) Distinguish between logistic and exponential growth curves of populations. [8 marks]
- (c) Outline the various methods that you would use to estimate the population size and density of small mammals or rodents at Malolotja Nature Reserve. Comment on the disadvantages of these methods. [13 marks]
- [TOTAL MARKS = 25]

**QUESTION 3**

Write a concise essay on the distribution, the climatic conditions and the composition of the plant and animal communities of the tropical rain-forest.

[TOTAL MARKS = 25]

**QUESTION 4**

Write short essays on the following:

- (a) Commensalism and Mutualism. (12½ marks)
- (b) Survivorship curves and include notes on the characteristics of r-selected species. (12½ marks)
- [TOTAL MARKS = 25]

**QUESTION 5**

- (a) Briefly explain the terms food chains and trophic levels. (8 marks)

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- (b) Using a simple model or diagram discuss the transfer or flow of energy through a natural ecosystem (12 marks)
- (c) Write a short note on ecological efficiencies. (5 marks)

**[TOTAL MARKS = 25]**

**QUESTION 6**

- (a) What are pollutants? (5 marks)
- (b) Using specific examples discuss the chemical and biological consequences of pollution in an aquatic ecosystem. (20 marks)

**[TOTAL MARKS = 25]**