

# **UNIVERSITY OF SWAZILAND**

**Faculty of Health Sciences**

**(BSC) IN ENVIRONMENTAL HEALTH**

**FINAL EXAMINATION PAPER 2006**

**TITLE OF PAPER** : ENVIRONMENTAL ECOLOGY

**COURSE CODE** : EHS 523

**DURATION** : THREE HOURS

**MARKS** : 100

**INSTRUCTIONS** :

- : ANSWER ONLY FIVE QUESTIONS
- : EACH QUESTION CARRIES 20 MARKS
- : QUESTIONS ONE AND TWO ARE COMPULSARY
- : NO QUESTION PAPER SHOULD BE BROUGHT INTO OR OUT OF THE EXAMINATION ROOM
- : BEGIN EACH QUESTION ON A SEPARATE SHEET OF PAPER

**DO NOT OPEN THIS QUESTION PAPER UNTIL PERMISSION IS GRANTED BY THE INVIGILATOR**

**QUESTION ONE**

- (a) What is biomass? (2 marks)
- (b) What is the pyramid of energy flow for an ecosystem? (2 marks)
- (c) What is the effect of the second law of thermodynamics on
  - (i) the flow of energy through an ecosystem? (5 marks)
  - (ii) the amount of food energy available to top carnivores and humans? (4 marks)
- (d) Distinguish between the pyramid of biomass and the pyramid of numbers (4 marks)
- (e) What would happen to an ecosystem if all its decomposers and detritus feeders were eliminated? (3 marks)

**Total 20 marks**

**QUESTION TWO**

- (a) What are the four components of biodiversity? (4 marks)
- (b) Why is biodiversity important to
  - (i) the earth's life support system (5 marks)
  - (ii) the economy of a country? (5 marks)
- (c) What is speciation? (2 marks)
- (d) Distinguish among biological evolution, the theory of evolution, microevolution, and macroevolution (4 marks)

**Total 20 marks**

**QUESTION THREE**

- (a) What is a desert? (1 marks)
- (b) What are the three major types of desert (3 marks)
- (c) How do these types of desert (in b) differ in climate and biological makeup? (9 marks)
- (d) Discuss how desert plants and animals survive heat and lack of water? (7 marks)

**Total 20 marks**

**QUESTION FOUR**

- (a) Define the following ecological terms

- (i) local extinction (2 marks)
- (ii) ecological extinction(2 marks)
- (iii) biological extinction (2 marks)
- (iv) endangered species(2 marks)
- (v) threatened species(2 marks)

- (b) Describe the major steps in wildlife management? (5 marks)
- (c) Discuss the major limitations to wildlife management? (5 marks)

**Total 20 marks**

**QUESTION FIVE**

- (a) What four factors affect population change? (4 marks)
- (b) Differentiate between density-dependent and density-independent factors that affect a population's size (4 marks)
- (c) What is the biotic potential of a population? (2 marks)
- (d) List four characteristics of a population with a high intrinsic rate of increase (4 marks)
- (e) Explain why empowering women can help reduce birth rates (6 marks)

**Total 20 marks**

**QUESTION SIX**

- (a) Evaluate the claims made by those opposing a reduction in births and those promoting a reduction in births (10 marks)
- (b) Which position do you support, and why? (5 marks)
- (c) How would your position help Swaziland? (5 marks)

**Total 20 marks**

**GOOD LUCK!!!**