

**UNIVERSITY OF SWAZILAND
DEPARTMENT OF GEOGRAPHY, ENVIRONMENTAL SCIENCE AND
PLANNING
FINAL EXAMINATION, DECEMBER 2006
B.A., BASS**

TITLE OF PAPER: BIOGEOGRAPHY

COURSE NUMBER: GEP 312

TIME ALLOWED: THREE (3) HOURS

INSTRUCTIONS:

- 1. ANSWER THREE QUESTIONS**
- 2. QUESTION 1 IS COMPULSORY**
- 3. ILLUSTRATE YOUR ANSWERS WITH
EXAMPLES AND CLEARLY DRAWN DIAGRAMS
WHERE APPROPRIATE**

**ALLOCATION OF MARKS: QUESTION 1 (COMPULSORY) CARRIES
40 MARKS WHILE THE REST CARRIES 30
MARKS EACH.**

**THIS PAPER SHOULD NOT BE OPENED UNTIL PERMISSION IS GRANTED
BY THE INVIGILATOR**

**SECTION A
COMPULSORY**

QUESTION 1

a) Define the following:

- i) Biomass (3 marks)
- ii) Allopathic species (3 marks)
- iii) Species diversity (3 marks)
- iv) Dead organic matter (3 marks)
- v) Photosynthetically active radiation (3 marks)

b) Using the hypothetical information in table 1 below:

- i) Calculate the species diversity (species richness and equitability) in Middleveld and Lubombo. (10 marks)
- ii) Comment on the relationship between species richness and equitability. (5 marks)

Table 1: Number of species in four physiographic regions of Swaziland

TAXON Species	Approximate number of species and latitude			
	Highveld	Middleveld	Lowveld	Lubombo
Beetles	4 000	2 000	169	90
Land Snails	250	100	25	0
Intertidal Mollusks	425	175	60	*
Reptiles	107	21	5	0
Amphibia	50	21	17	0
Fresh-Water Fish	*	75	20	1
Coastal Marine Fish	650	225	75	*
Flowering Plants	2 500	1 650	390	218
Ferns and Club Mosses	*	70	31	11

*Data lacking

Source: Hypothetical

c) Table 2 below shows the results of a study conducted to determine the relationship between two species in ten quadrats.

Table 2: Number of plants within ten quadrats in a hypothetical area.

Quadrat Number	Species A	Species B
1	13	10
2	12	8
3	9	0
4	0	0
5	0	15
6	0	0
7	23	0
8	50	34
9	10	0
10	26	13

- i) Calculate the co-efficient of association between the species. (5 marks)

- ii) What can you conclude about the compatibility of the two species? (5 marks)
(40 marks)

SECTION B: ANSWER ANY TWO QUESTIONS

QUESTION 2

Discuss the factors that influence present-day plant distribution patterns in Southern Africa. (30 marks)

QUESTION 3

Compare and contrast inter-specific and intra-specific biotic factors that influence the distribution of plants and / or animals on the earth surface. (30 marks)

QUESTION 4

- a) Outline the characteristics of an ecosystem. (5 marks)
- b) Using either the nitrogen or phosphorous cycle as an example, discuss the effects of anthropogenic activities on plant distribution in any ecosystem. (25 marks)
(30 marks)

QUESTION 5

- a) Compare and contrast allogenic and autogenic succession. (8 marks)
- b) Discuss the main theories of ecological succession and the development of a climax community. (22 marks)
(30 marks)