

**UNIVERSITY OF SWAZILAND  
DEPARTMENT OF GEOGRAPHY, ENVIRONMENTAL SCIENCE AND  
PLANNING**

**FINAL EXAMINATION, DECEMBER 2010**

**B.A., BASS, B. Ed.**

**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 CARRY 30  
MARKS EACH**

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

**GEP 312: BIOGEOGRAPHY – DECEMBER 2010****SECTION A: COMPULSORY****QUESTION 1**

- a) Define the following terms:
- i. Denitrification (2 marks)
  - ii. Compensation point (2 marks)
  - iii. Niche (2 marks)
  - iv. Physiognomy (2 marks)
  - v. Allopathic species (2 marks)
- b) Using the hypothetical information in table 1 below:  
Calculate the species diversity (species richness and equitability) in Highveld and Lowveld regions of Swaziland. (10 marks)

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

| Species               | Approximate number of species and region |            |         |         |
|-----------------------|--|------------|---------|---------|
|                       | Highveld                                 | Middleveld | Lowveld | Lubombo |
| Beetles               | 4 000                                    | 2 000      | 169     | 90      |
| Land Snails           | 250                                      | 100        | 25      | 0       |
| Intertidal Mollusks   | 425                                      | 175        | 60      | 0       |
| Reptiles              | 107                                      | 21         | 5       | 0       |
| Amphibia              | 50                                       | 21         | 17      | 0       |
| Fresh-Water Fish      | 650                                      | 775        | 920     | 1       |
| Coastal Marine Fish   | 0  | 25         | 75      | 0       |
| Flowering Plants      | 2 500                                    | 1 650      | 390     | 218     |
| Ferns and Club Mosses | 70                                       | 70         | 31      | 11      |

Source: Hypothetical

- c) Discuss the applications of biogeography in the study and management of environmental change. (20 marks)  
(40 marks)

**SECTION B: ANSWER ANY TWO QUESTIONS****QUESTION 2**

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 3**

- a) Explain the factors influencing primary productivity in an ecosystem. (15 marks)

- b) Explain how light affects ecosystem characteristics and development. (15 marks)  
**(30 marks)**

**QUESTION 4**

Identify and discuss the components of biological cycling. **(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)**