UNIVERISTY OF SWAZILAND

DEPARTMENT OF GEOGRAPHY, ENVIRONMENTAL SCIENCE AND PLANNING

FINAL EXAMINATION, DECEMBER 2014

B.A., BASS, B. Ed. (FT/PT)

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 2014

SECTION A: COMPULSORY

QUESTION 1

a) Using examples, explain the physiological adaptations of plants and animals to environmental changes. (20 marks)

b) Using the data in Table 1 below calculate the following:
   i) Species richness in quadrats 1 and 3. (2 marks)
   ii) Species equitability in quadrat 4. (5 marks)
   iii) Frequency of species for; (3 marks)
   - *Vangueria infausta*
   - *Adina, and*
   - *Tabernaemontana elegans*

c) Coefficient of association between *Combretum molle* and
   - *Tabernaemontana elegans* (5 marks)
   - *Adina* (5 marks)

(40 Marks)

Table 1: The most common and endangered species within a hypothetical study area

Name of species	Number of individuals			
	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4
Imbondvo lemnyama (*Combretum molle)*	88	78	63	70
Imbondvo lemhlophe (*Combretum zeyheri*)	16	23	55	68
Incithamuzi (*Ilex mitis)*	23	34	10	26
Umntulu *(Vangueria infausta)*	14	3	1	4
Sihubhulu *(Bridelia Micrantha)*	3	5	8	5
Umncozi (*Syzgium cordatum*)	10	12	0	10
Umhlume (*Adina)*	55	9	10	0
Umkhamamasi wemfula (*Tabernaemontana elegans*)	2	7	0	0
Umhonono wemfula (*Terminalia sambesiaca*)	0	10	9	38
Umkhiwa wemfula *(Ficus capensis)*	10	0	11	10

Source: Hypothetical

SECTION B: ANSWER ANY TWO QUESTIONS

QUESTION 2

a) Explain why biogeographical studies tend to pay special attention on the study of plants rather than animals. (15 marks)

b) Using examples, discuss the factors affecting biomass present in an ecosystem.

(15 marks)
(30 Marks)

QUESTION 3

Discuss the effects of climate change on various levels of biological diversity. **(30 Marks)**

QUESTION 4

a) Using examples, explain how organisms ensure differential co-existence in a community.

(15 marks)

b) Explain the factors affecting primary productivity in a biotic community. (15 marks)
(30 Marks)

QUESTION 5

Using examples, explain the applications of biogeographical research on conservation and sustainable use of biological diversity. **(30 Marks)**