

UNIVERSITY OF SWAZILAND

MAIN EXAMINATION PAPER 2013

TITLE OF PAPER : ECOLOGY

COURSE CODE : B304

TIME ALLOWED : THREE HOURS

INSTRUCTIONS :

1. SECTION A CARRIES 40 MARKS AND IS **COMPULSORY**
2. CHOOSE ANY **TWO** QUESTIONS FROM SECTION B, EACH OF WHICH CARRIES 30 MARKS
3. REMEMBER TO USE APPROPRIATE TERMINOLOGY AND ILLUSTRATIONS.

SPECIAL REQUIREMENTS: NONE

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

SECTION A: COMPULSORY QUESTION

QUESTION 1

(a) Discuss 3 key major soil forming factors. (15 marks)

(b) Use the table below derived from an annual census of kudus in a game reserve to answer the following questions:

Age	Number of survivors	Offspring produced
0-1	1000	0
1-2	800	0
2-3	790	80
3-4	775	124
4-5	764	115
5-6	730	103
6-7	687	93
7-8	640	87
8-9	570	71
9-10	440	23
10-11	252	9
11-12	101	3
12-13	7	1
13-14	4	0
14-15	1	0
15-16	0	0

(i) Provide an expanded table and populate accordingly. (9 marks)

(ii) Draw the survivorship and fecundity graphs (8 marks)

(iii) Characterize and discuss the observed survival pattern (including calculating R_0). (8 marks)

(40 marks)

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

- (a) Briefly discuss the ecology of one extremophilic microorganism. (10 marks)
- (b) Draw, label and fully explain a typical performance curve of an organism under varying environmental conditions. (20 marks)
- (30 marks)**

QUESTION 3

- a) Discuss the concepts of density-dependent and density-independent population trajectories in ecology? (16 marks).
- b) Define the following terms:
- i. Biodiversity
 - ii. Acclimation
 - iii. Metapopulation
 - iv. Population
 - v. Niche
 - vi. Foraging
 - vii. Cohort

(14 marks)
(30 marks)

QUESTION 4

With the aid of appropriate illustrations, discuss Clement's floristic relay hypothesis and Egler's Initial Floristic Composition.

(30 marks)

QUESTION 5

- (a) Briefly discuss the intermediate disturbance hypothesis. (5 marks)
- (b) Discuss the principle of allocation in foraging ecology. (6 marks)
- (c) Using illustrations, briefly describe the following dispersion patterns of individuals of a population:
- i. random
 - ii. clumped
 - iii. uniform
- (9 marks)
- (d) Explain the differences between oligotrophic and eutrophic lakes (10 marks)

(30 marks)