NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY

FACULTY OF HEALTH, NATURAL RESOURCES AND APPLIED SCIENCES

SCHOOL OF AGRICULTURE AND NATURAL RESOURCE SCIENCES

DEPARTMENT OF NATURAL RESOURCES SCIENCES

QUALIFICATION: BACHELOR OF NATURAL RESOURCES MANAGEMENT	
QUALIFICATION CODE: 07BNRS	**LEVEL:** 7
COURSE CODE: CSE511S	**COURSE NAME:** CONSERVATION ECOLOGY 1
DATE: JUNE 2023	
DURATION: 3 HOURS	**MARKS:** 150

FIRST OPPORTUNITY EXAMINATION QUESTION PAPER	
EXAMINER(S)	Prof. T.D. Wassenaar, Mr. J. Amutenya and Mrs. C Ntesa
MODERATOR:	Mr. H. Tjikurunda

INSTRUCTIONS
1. Answer ALL the questions. 2. Write clearly and neatly. 3. Number the answers clearly.

PERMISSIBLE MATERIALS

1. Examination question paper
2. Answering book
3. Calculator

THIS QUESTION PAPER CONSISTS OF 4 PAGES (Excluding this front page)

QUESTION 1

Write short notes to define or explain the following scientific terms:

1.1.	Ecology	(2)
1.2.	Competitive exclusion principle	(2)
1.3.	Population	(1)
1.4.	Life history	(1)
1.5.	Ecology community	(1)
1.6.	Trophic cascade	(2)
1.7.	Species richness	(1)
1.8.	Nutrient cycling	(2)

[12]

QUESTION 2

***Explain* the difference between the following pairs of terms.**

2.1.	Autogenic vs. Allogenic Ecosystem Engineers	(2)
2.2.	Interspecific vs. Intraspecific competition	(2)
2.3.	Food Chain vs. Food Web	(2)
2.4.	Crude density vs. Ecological density	(2)
2.5.	Ubiquitous species vs Endemic species	(2)

[10]

QUESTION 3

3.1. ***Fill*** in the missing words: (2)
Ecologists study pattern and a) _____ at many b) _____.

3.2. ***Who*** wrote the book called "The Origin of Species"? (1)

3.3. ***List*** the hierarchy of components or elements in the realm of ecology, in their order of scale from small to large. ***Use*** arrows to indicate the progression between the elements. (4) ½ a mark each

3.4. (a) Is this statement correct: "The earth is a system"? (1). (7)
(b) If your answer is no, ***why*** do you think it is not a system? If your answer is yes, ***what*** does it mean when you say the earth is a system? (Start your answer with a basic general definition of a system) (6).

3.5 ***List*** the four cycles that are important for ecology. (4)

[18]

QUESTION 4

4.1. ***List*** the three possible outcomes of interspecific competition. (3)

4.2. Predation is one of the forms of exploitative interactions, involving predator and prey species and it can affect the abundance of the prey population, serve as agents of natural selection and influence the evolution of both predator and prey. However, prey species have evolved a wide range of characteristics to avoid being detected, selected, and captured by predators. These are categorised as either chemical or behavioural defenses. ***List*** and ***explain*** any five (5) chemical predator defense mechanisms that were discussed in class. (10)

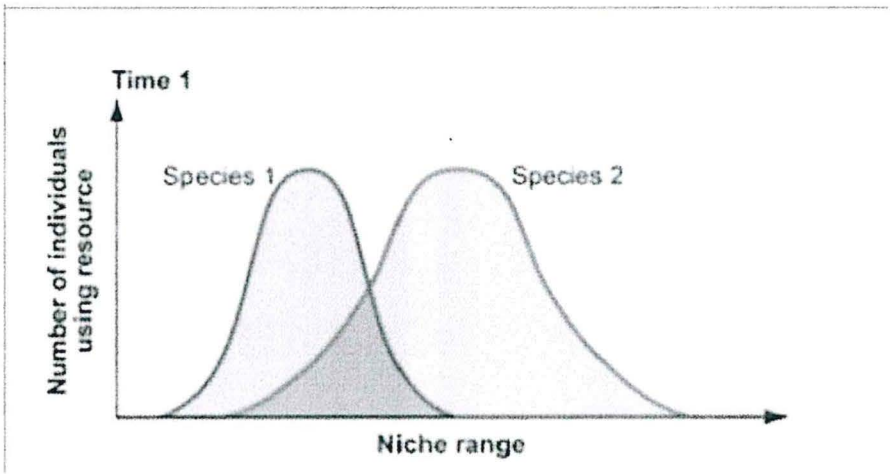
[13]

QUESTION 5

5.1. ***Distinguish*** between fundamental niche and realised niche. (4)

5.2. Study the graph below and ***describe*** the two species in terms of: (8)

(a) Niche width
(b) Extent of niche overlap
(c) Degree of competition
(d) Generalist species vs. specialist species
(e) Potential of becoming extinction if environmental conditions change



[12]

QUESTION 6

6.1. Based on studies of survival by a wide variety of organisms, Population Ecologists have proposed that most survivorship curves fall into three major categories. ***Draw*** a graph illustrating the three survivorship curves and ***explain*** each one of them. (10)

6.2. Population growth is illustrated by population growth curves that are used to describe growth patterns. ***Describe*** and ***compare*** the two basic patterns of population growth based on mathematical models. Also ***indicate*** which of the two growth patterns is more common in nature. (7)

6.3. ***Differentiate*** between r-strategist/selection species and k-strategists/selection species. Given an example of each. (8)

[25]

QUESTION 7

7.1. You have been appointed as the Warden for Khaudum National Park. ***Which*** ecological measurement would you use to measure Species diversity in the park? (2)

7.2. ***Provide*** a detailed explanation of ***why*** areas around the equator have higher biodiversity, compared to areas north or south of the equator. (4)

7.3. Dispersal limitation is one of the key factors that shape and affect community organisations. ***Name*** five factors that affect/prevent the movement of a species from the community in which they were born to another community, where they will settle and reproduce. (5)

[11]

QUESTION 8

8.1. African savannas are complex systems, however, they are prone to disturbances. ***Name*** four different disturbances that can affect the structure of the community. (4)

8.2. ***Expand*** on what the Intermediate Disturbance Hypothesis predict. (4)

[8]

QUESTION 9

9.1. Ecologists are mainly interested in Net Primary Production (NPP) of an ecosystem. ***Explain*** the reasons why. (4)

9.2. Decomposition is a complex process that recycles essential elements to the ecosystem. ***Discuss*** the process of decomposition in an ecosystem by clearly listing all the four stages of decomposition and provide a detailed explanation of what each stage involves. (11)

[15]

QUESTION 10

10.1. ***Name*** and ***explain*** the four-element that make up the structure of a landscape. (8)

10.2. ***Explain*** the three levels of dispersal among patches. (6)

10.3 ***Name*** the two important factors that drive metapopulation dynamics. (2)

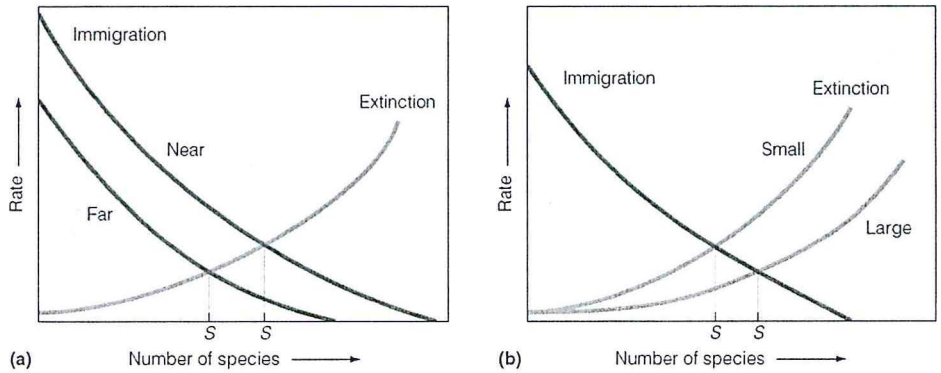
[16]

QUESTION 11

11.1. ***True or false***: "macro-ecology is the study of relations among organisms and between organisms and their environment, as these play out at global scale." (1)

11.2. ***List*** three patterns that form part of the sub-discipline called "macro-ecology" that are important for natural resource managers. (3)

11.3 Study these two graphs, then answer the questions below. (4)



(a): Which of the three macro-ecological patterns are described by these two graphs?

(b): Explain the basic theoretical functional relationship that is illustrated by graph a.

11.4 ***List*** two of the six ways in which climate change is impacting biodiversity. (2)

[10]

TOTAL: 150 marks