



FACULTY	AGRICULTURE, ENGINEERING & NATURAL SCIENCES
DEPARTMENT	ENVIRONMENTAL SCIENCE
SUBJECT	ENVIRONMENTAL BIOLOGY FOR EDUCATORS
SUBJECT CODE	EBE 3772
DATE	JANUARY 2022
DURATION	3 Hours
MARKS	120

SUMMER TERM EXAMINATION

Examiners: Ms. C. Deelie & Ms S. Kapala (University of Namibia)

Moderator: Dr. W. C. Nesongano (University of Namibia)

This Examination paper consists of 3 pages including this front page

Instructions

- Section A: Compulsory
- Section B: Answer **TWO** questions only

SECTION A (60 marks)
Answer all questions from this section

Question 1: [15]

1.1 Match each of the following terms with its correct description. (5)

- | | |
|----------------------------------|---|
| 1. Generalized compartment model | (a) predicts what would happen if an ecosystem was changed. |
| 2. Net primary productivity | (b) describes how nutrients accumulate in four compartments. |
| 3. Secondary productivity | (c) the energy transfer from producers to consumers |
| 4. Simulation modeling | (d) gross primary productivity minus the energy used for cellular respiration |
| 5. Trophic cascade | (e) the relationship between a predator and prey that affects populations in two or more trophic levels |

1.2 Define “biogeochemical cycles” (2)

1.3 List the four compartment of the biosphere in which biogeochemical cycles occur (4)

1.4 Describe what happens to the solar radiation reaching terrestrial and aquatic habitats (4)

Question 2: [15]

2.1 Describe the processes in the carbon cycle, including the conversions that occur. (6)

2.2 Describe the various ways in which animals use color to defend themselves against attacks by predators. (6)

2.3 What are the characteristics of species that are successful invaders of ecosystems? (3)

Question 3: [15]

3.1 Name and explain the levels of Extinction (8)

3.2 Why do islands experience high rates of extinctions? (2)

3.3 Species diversity decreases as we move away from the equator towards the poles. What could be the possible reasons?
(5)

QUESTION 4 [15]

4.1 Provide the 3 main reasons for high endemism in certain areas. (3)

- 4.2 How does habitat fragmentation affect biodiversity? (5)
- 4.3 Explain why the transfer of energy between different feeding (trophic) levels in an ecosystem is not 100% (5)
- 4.4 Mining contributes to 25% of Namibia's Gross Domestic Income, and is the largest contributor to the Namibian economy. How does the mining industry contribute to desertification? (2)

SECTION B (TOTAL MARKS (60))

Answer any TWO of the following questions

QUESTION 1

Name and explain the four main causes of arid ecosystems and provide appropriate examples for each. (30)

QUESTION 2

Discuss, with the aid of diagrams the three basic patterns of spatial dispersion of individual members of a population. (30)

QUESTION 3

What is global warming? Discuss the evidence of global warming giving appropriate examples. (30)