UNAM
UNIVERSITY OF NAMIBIA

FACULTY	AGRICULTURE, ENGINEERING & NATURAL SCIENCES		
SCHOOL	SCIENCE		
DEPARTMENT	ENVIRONMENTAL SCIENCE		
SUBJECT	FUNCTIONAL BIODIVERSITY OF AQUATIC ECOSYSTEMS		
SUBJECT CODE	EBB 5952		
DATE	NOVEMBER 2021		
DURATION	3 HOURS	**MARKS**	120

REGULAR EXAMINATION

Examiner: Dr C. Hay (University of Namibia)
Ms C. Deelie (University of Namibia)

Moderator: Prof. C. Chimimba (University of Pretoria)

This examination paper consists of three **(3) pages** including the cover page

Instructions

- Candidates must answer ALL questions in Section A and **TWO questions from Section B.**

EXAMINATION

SECTION A

Answer ALL questions in this section.

Question 1. **(5)**

Describe the impacts of the slight increase in surface water temperature in Lake Tanganyika due to climate change.

Question 2. **(3)**

Motivate in which zone in the ocean would you expect to find a high number of K-selected benthic species.

Question 3. **(6)**

Explain why benthos are important to the biological community in estuaries.

Question 4. **(4)**

Suggest explanations for the colonization between hydrothermal vents by aquatic organisms that could be hundreds of kilometers apart.

Question 5: **(10)**

Explain phytoplankton adaptation and the processes taking place for phytoplankton to stay near the surface where there is sunlight.

Question 6: **(15)**

Describe the value of the flood pulse concept of the Upper Zambezi River in Namibia.

Question 7: **(5)**

What environmental challenges do tide pool organisms encounter during the tidal cycle?

Question 8: **(9)**

With examples, discuss the dynamics behind the impact oceans have on the global weather patterns.

Question 9: **(3)**

Clarify the following statement "***Redundancy of genes and species* is *necessary for the long-term survival of marine ecosystems*".**

Sub-total marks (Section A) = 60

SECTION B

Answer any TWO questions from this Section.

Question 1. **(30)**

1.1. Discuss the interactions between living organisms, vegetation and abiotic factors in a river system (could be for tropical, temperate rivers or both) as you transgress from the upper catchment to the lower reaches of the river system. Include different headings in your discussion. (20)

1.2. Describe the processes behind the variability of phytoplankton concentrations in both spatial and temporal dimensions in the ocean. (10)

Question 2. **(30)**

Describe the processes that influence the feeding and biodiversity of the deep-sea benthos.

Question 3. **(30)**

3.1. Explain the paradox that coral reefs are present in nutrient poor waters, but are one of the most productive ecosystems. (20)

3.2. Briefly illustrate the role that viruses and bacteria play in the pelagic food web. (10)

Sub-total marks (Section B) = 60
Grand Total Marks = 120

*****END OF QUESTION PAPER *****