



# THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

**A. M. E. C. E. A**

P.O. Box 62157  
00200 Nairobi - KENYA  
Telephone: 891601-6  
Fax: 254-20-891084  
E-mail: academics@cuea.edu

**MAIN EXAMINATION**

**JANUARY – APRIL 2017 TRIMESTER**

**FACULTY OF SCIENCE**

**DEPARTMENT OF BIOLOGY**

**REGULAR PROGRAMME**

**BIO 403: MARINE BIOLOGY**

**Date: April 2017**

**Duration: 2 Hours**

**INSTRUCTIONS: Answer Question ONE and any other TWO Questions**

Q1

a) Make a distinction between the following:

- i. Spring tide and neap tide **(2 marks)**
- ii. Hypolimnion and epilimnion **(2 marks)**
- iii. Oceanic and neritic provinces of the sea **(2 marks)**
- iv. Seaweeds and seagrasses **(2 marks)**

b) Explain vertical migration of zooplankton and its importance

**(4 marks)**

c) By use of well-labelled diagram only, illustrate the major ecological divisions of the marine waters

**(5 marks)**

d) A student at Gazi Bay used the Light-Dark bottle method to determine primary productivity. The following oxygen levels in  $\text{mgL}^{-1}$  were recorded.

|                  | Transparent bottle | Dark bottle |
|------------------|--------------------|-------------|
| Initial, 6.00 am | 2.88               | 2.88        |
| Final, 9.00 am   | 3.02               | 2.45        |

- i) Account for the difference in final oxygen levels in the transparent and dark bottles **(4 marks)**
- ii) Calculate the gross primary productivity that the student obtained **(4 marks)**
- e) Name two feeding methods in deep sea organisms **(1 mark)**
- f) Briefly discuss ways by which plankton avoid sinking **(4 marks)**
- Q2. Describe how mangroves are adapted to the conditions of life in their environment **(20 marks)**
- Q3. Describe environmental conditions in soft-bottomed shores and giving examples discuss adaptations of animals for survival in such shores **(20 marks)**
- Q4.
- a) Outlining the variety of coral reefs, describe coral reef formation **(10 marks)**
- b) Discuss factors affecting growth of coral reefs **(10 marks)**
- Q5. Fully evaluate the impacts of human activities along the Kenya coast to the marine environment **(20 marks)**

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