



# THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

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

P.O. Box 62157

00200 Nairobi - KENYA

Telephone: 891601-6

Ext 1022/23/25

**MAIN EXAMINATION**

**JANUARY – APRIL 2022**

**FACULTY OF SCIENCE**

**DEPARTMENT OF BIOLOGY**

**REGULAR PROGRAMME**

**BIO 403: MARINE BIOLOGY**

**Date: APRIL 2022**

**Duration: 2 Hours**

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

- Q1. a) Define the term thermocline and explain thermocline phenomenon in Arctic Ocean and Indian Ocean **(5 marks)**
- b) What is the source of CO<sub>2</sub> that phytoplankton use for photosynthesis? **(2 marks)**
- c) The ocean (hydrosphere) is one part of the broader carbon cycle.
- i) Name three other important carbon sinks. **(3marks)**
- ii) How can human activities affect the carbon cycle? **(2marks)**
- d) Describe the characteristics of three types of coral reefs **(3 marks)**
- e) Describe how organisms living in benthic zones are adapted to their feeding habits **(6 marks)**
- f) Describe a food web that is likely to be found at the artic ocean **(5 marks)**

- Q2. Describe the Indian Ocean water characteristics in reference to carbon dioxide, light, salinity, pressure and oxygen **(20 marks)**
- Q3. Identify five marine features and explain ways in which man growth and development is affecting their productivity **(20 marks)**
- Q4. Which techniques are employed in gathering marine ecological data and quantitative data analysis **(20 marks)**
- Q5. a) Discuss the mutualism relationship between coral reefs and zooxanthellae cells **(10 marks)**
- b) Describe four types of estuaries and their biological importance to marine ecosystem **(10 marks)**

**\*END\***