



**MASINDEMULIROUNIVERSITY OF  
SCIENCE AND TECHNOLOGY  
(MMUST)**

**MAIN CAMPUS**

**MAIN EXAMINATIONS**

**2023/2024 ACADEMIC YEAR**

**SECOND YEAR FIRST SEMESTER EXAMINATIONS**

**FOR THE DEGREE**

**OF**

**BACHELOR OF SCIENCE IN DISASTER PREPAREDNESS AND ENVIRONMENTAL  
TECHNNLOGY**

**BACHELOR OF SCIENCE IN DISASTER MITIGATION AND SUSTAINABLE  
DEVELOPMENT**

**COURSE CODE: DPE 201**

**COURSE TITLE: CLIMATOLOGY AND DISASTER MANAGEMENT**

**DATE 13/12/2023**

**TIME: 8-10AM**

**INSTRUCTIONS TO CANDIDATES**

**TIME: 2 HOURS**

**Answer Question 1(ONE) and any other TWO Questions**

**MMUST observes ZERO tolerance to examination cheating**

*This Paper Consists of 2 Printed Pages. Please Turn Over.*

**SECTION 1: COMPULSORY {30 MARKS}**

**Question ONE**

- a) Using the knowledge gained from climate and disaster management, how justified is it to describe the atmosphere, oceans, and Earth surface as the “global climate system”. **(5 marks)**
- b) Scientists have long known that the atmosphere’s greenhouse gases act as a “blanket” Justify its existence and impact on the earth surface **(6 marks)**
- c) Using your own understanding, what could be the major causes of climate change in Kenya? **(8marks)**
- d) Describe the methods used to record the following weather elements:
  - i) Rainfall **(4 marks)**
  - ii) Air temperature **(3 marks)**
  - iii) Atmospheric pressure **(4 marks)**

**SECTION II: ATTEMPT ANY OTHER TWO (2) QUESTIONS [40 MARKS]**

**Question TWO**

- a) Discuss the influence of the sea surface temperatures (SST) anomalies on the General circulation patterns. **(15 marks)**
- b) State models used in ocean-atmosphere interaction determining tropical variability **(5marks)**

**Question THREE**

In recent years, Earth observation has become technologically more and more sophisticated. Discuss how observation is managed? **(20 marks)**

**Question FOUR**

Using relevant examples state and explain how climate change has affected the following sectors.

- a) Agriculture and food security **(12 marks)**
- b) Water sector **(8 marks)**