



# MACHAKOS UNIVERSITY

University Examinations For 2021/2022 Academic Year

**SCHOOL OF ENVIRONMENT AND NATURAL RESOURCES MANAGEMENT**

**DEPARTMENT OF ENVIRONMENTAL SCIENCES**

**FOURTH YEAR SECOND SEMESTER SEMESTER EXAMINATION FOR  
BACHELOR OF SCIENCE (AGRICULTURAL EDUCATION AND EXTENSION)**

**AGR 483: CLIMATE CHANGE AND ADAPTATION IN AGRICULTURE**

**DATE:**

**TIME:**

---

**INSTRUCTIONS: Answer question ONE and any other TWO questions**

## **QUESTION ONE (30 MARKS)**

- a) Differentiate climate change and climate variability. (4 marks)
- b) Discuss the impacts of climate change in agriculture in Kenya. (14 marks)
- c) Using illustrations, discuss the greenhouse effect and its importance to water cycle. (12 marks)

## **QUESTION TWO (20 MARKS)**

- a) Discuss the actions that Parties to REDD+ are encouraged to take to ensure the success of the initiative. (10 marks)
- b) Explain the FOUR key targets of the Paris Agreement. (10 marks)

## **QUESTION THREE (20 MARKS)**

Discuss the **cap-and-trade scheme** as an example of market-based instruments of financing adaptation and mitigation measures

Citing examples, critically analyse the challenges countries would face regarding implementation of climate change adaptation strategies in transboundary water basins.

**QUESTION FOUR (20 MARKS)**

Using local examples, discuss the individual elements of vulnerability to climate change in agro-systems.

**QUESTION FIVE (20 MARKS)**

Using Kenya as an example, discuss Climate Smart Agriculture (CSA) as an effective response strategy to address impacts of climate change on the agricultural sector.