



**MASENO UNIVERSITY**  
**UNIVERSITY EXAMINATIONS 2015/2016**

**FOURTH YEAR SECOND SEMESTER EXAMINATIONS FOR THE  
DEGREE OF BACHELOR SCIENCE IN CLIMATE CHANGE AND  
DEVELOPMENT WITH INFORMATION TECHNOLOGY**

**MAIN CAMPUS**

**NCA 409: CLIMATE SMART AGRICULTURE**

Date: 19<sup>th</sup> April, 2016

Time: 11.00 - 1.00 pm

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**INSTRUCTIONS:**

- Answer question ONE and any other TWO questions.
- Sketch maps and diagrams should be used whenever appropriate.



**Question 1**

- (a) Explain any two technologies that contribute to energy smart food systems. (10 Marks)
- (b) Explain five major sources of Greenhouse Gas emissions along the animal food chain. (5 Marks)
- (c) Discuss five livestock production management practices that contribute to climate smart agriculture. (15 Marks)

**Question 2**

- (a) Explain three elements of Agricultural landscapes. (6 Marks)
- (b) Describe, using a relevant case study, how the landscape approach can be used to preserve a tropical mountain agro-forestry system. (14 Marks)

**Question 3**

- (a) Explain six development issues that arise from the Climate-smart Agriculture – Water Management nexus. (6 Marks)
- (b) Describe four areas that hold potential for substantive increases in water productivity for Climate-smart Agriculture. (4 Marks)
- (c) Describe the System of Rice Intensification and explain how it increases productivity of irrigated rice. (10 Marks)

**Question 4**

- (a) Explain five soil principles that are critical for addressing the challenges of climate change to soil. (5 Marks)
- (b) Describe the following soil management practices for Climate-smart Agriculture:
- (i) Integrated Soil-crop-water management. (5 Marks)
  - (ii) Water use efficiency and irrigation. (5 Marks)
  - (iii) Restoration of degraded soils. (5 Marks)

**Question 5**

Discuss technological and behavioral adaptation measures to reduce losses in any four energy systems. (20 Marks)

**Question 6**

Describe Kenya's Intended Nationally Determined Contribution (INDC) and explain how it will enable the country achieve a low Carbon, Climate resilient pathway. (20 Marks)