



MASENO UNIVERSITY
UNIVERSITY EXAMINATIONS 2017/2018

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

MAIN CAMPUS

NCA 412: FORESTRY AND AGROFORESTRY MANAGEMENT

Date: 16th February, 2018

Time: 3.30 - 6.30pm

INSTRUCTIONS:

- Answer Question ONE and any other TWO
- Use of diagrams and illustrations whenever appropriate



NCA 412: Forestry and Agroforestry Management

QUESTION ONE

- a) Discuss how sustainable forest management provides socio-economic and ecological benefits and also mitigates climate change **(15 marks)**
- b) Describe strategies through which forest conservation, restoration and sustainable use can be used to build resilience to climate change **(15 marks)**

QUESTION TWO

Describe the techniques for sustainable management of natural regeneration in even-aged systems to ensure that forests maintain their ecological functions **(20 marks)**

QUESTION THREE

You have been engaged as a consultant by the Kenya Forest Service to develop a management plan for Kakamega Rainforest. Based on the principles of sustainable forest management, prepare the management plan bearing in mind that the forest is important for biodiversity conservation, community livelihood support and climate change mitigation. **(20 marks)**

QUESTION FOUR

Citing appropriate examples, distinguish between rotational, spatial mixed and spatial zoned agroforestry systems. **(20 marks)**

QUESTION FIVE

In a REDD+ project, the Kenya Forest Service replanted 100 ha of a degraded forest in Kenya in 2010. Currently, each hectare has an average of 1,000 trees and each tree has an aboveground biomass of 0.3 tons. Since 1 ton of wood biomass is equivalent to 0.5 tons of carbon; and 1 ton of carbon is equivalent to 1 carbon credit, estimate the following, clearly showing how you arrive at your answers:

- a) The present carbon credit for the 100 ha forest **(14 marks)**
- b) The CO₂ equivalent of the REDD+ project in terms of reduced greenhouse emissions **(6 marks)**

QUESTION SIX

As part of its corporate social responsibility on climate change mitigation, a major tea producing company in Kenya plans to promote agroforestry among smallholder tea farmers that border the company's tea estate. Assuming the company has engaged you to develop the agroforestry development plan, identify appropriate agroforestry systems and describe their climate change mitigation benefits. **(20 marks)**