



(The University of Choice)

**MASINDE MULIRO UNIVERSITY OF
SCIENCE AND TECHNOLOGY**

**UNIVERSITY EXAMINATIONS
2013/2014 ACADEMIC YEAR**

FOURTH YEAR FIRST SEMESTER EXAMINATIONS

FOR THE DEGREE

OF

**BACHELOR OF SCIENCE IN CIVIL AND STRUCTURAL
ENGINEERING**

COURSE CODE: CSE 433

COURSE TITLE: ENGINEERING FOR SUSTAINABLE DEVELOPMENT

DATE:

TIME: 3 HOURS

INSTRUCTIONS TO CANDIDATES

This paper has Six Questions

Attempt ALL Questions in Section A and Any THREE Questions in Section B

SECTION A (Compulsory)

Question One (16 Marks)

- a) Define sustainable development and describe the elements of sustainable development (9 marks)
- b) "The Tragedy of the Commons" is often used as a device to articulate key sustainability dilemmas. Discuss this concept with respect to sustainable exploitation of natural resources (7 marks)

Question Two (15 Marks)

- a) Discuss the relationship between population growth and environmental degradation in Kenya (5 marks)
- b) Discuss how accumulation and concentration of a natural resource affect its exploitation (5 marks)
- c) What is Environmental Impact Assessment and what is its relevance? (5 marks)

SECTION B (Attempt Any THREE Questions)

Question Three (13 Marks)

- a) Describe how abiotic factors influence the sustainability of an ecosystem (7 marks)
- b) Identify three unsustainable features of the transport sector in Kenya. Propose how you could improve the sustainability of these identified features. (6 marks)

Question Four (13 Marks)

- a) Discuss how human actions increase the carrying capacity of some ecosystems (5 marks)
- b) Outline any three principles of sustainable construction and explain how Life cycle costing and life cycle analysis can be used to achieve sustainable construction (8 Marks)

Question Five (13 Marks)

Discuss the concept of sustainable development with respect to Kenya's Vision 2030

Question Six (13 Marks)

- a) Outline the interactions of biotic factors in an ecosystem (5 marks)
- b) Kenya is a water scarce country, describe how sustainable development can be achieved in Kenya's water sector (8 marks)