



MACHAKOS UNIVERSITY

University Examinations for 2016/2017

SCHOOL OF AGRICULTURE AND NATURAL RESOURCES MANAGEMENT

DEPARTMENT OF ENVIRONMENTAL STUDIES

FIRST YEAR SECOND SEMESTER EXAMINATION FOR BACHELOR OF SCIENCE IN
ENVIRONMENTAL STUDIES AND COMMUNITY DEVELOPMENT

ECD 110: ENVIRONMENTAL INNOVATIONS AND TECHNOLOGY

DATE: 2/6/2017

TIME: 11:00 – 1:00 PM

INSTRUCTIONS:

Answer Question ONE and ANY other Two Questions

QUESTION ONE (COMPULSORY) (30 MARKS)

- a) Define the following terms.
- i. Innovation (2 marks)
 - ii. Technology (2 marks)
 - iii. Social innovation (2 marks)
 - iv. Smart city (2 marks)
 - v. Radical innovation (2 marks)
- b) Explain five drivers of environmental innovations (10 marks)
- c) Citing specific examples discuss five roles of technology in addressing environmental challenges (10 marks)

QUESTION TWO (20 MARKS)

Discuss the role of the following in promotion of environmental innovations

- a) Innovation policy (10 marks)
- b) Research (10 marks)

QUESTION THREE (20 MARKS)

- a) Explain the five core elements of social innovation (10 marks)
- b) Using five case examples discuss how social innovation can be used for environmental protection (10 marks)

QUESTION FOUR (20 MARKS)

Discuss the contribution of the following energy technologies in enhancing environmental and community sustainability.

- a) Improved cook stoves (5 marks)
- b) Bio-energy technologies (5 marks)
- c) Solar heating technologies (5 marks)
- d) Energy saving bulbs (5 marks)

QUESTION FIVE (20 MARKS)

- a) List five barriers of environmental innovations in Kenya. (5 marks)
- b) Discuss the concept of integrated solid waste management highlighting the five stages of waste management hierarchy. (15 marks)