



MACHAKOS UNIVERSITY

University Examinations for 2018/2019 Academic Year

SCHOOL OF ENVIRONMENT AND NATURAL RESOURCES MANAGEMENT

DEPARTMENT OF ENVIRONMENTAL SCIENCES

FIRST YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF ENVIRONMENTAL STUDIES AND COMMUNITY DEVELOPMENT

ECD 110: ENVIRONMENTAL INNOVATIONS AND TECHNOLOGY

DATE: 27/9/2019

TIME:2.00-4.00 PM

INSTRUCTIONS:

Answer question ONE and any other TWO questions

QUESTION ONE (30 MARKS)

- a) Define the following terms.
- i. Environmental Innovation (2 marks)
 - ii. Technology (2 marks)
 - iii. Social innovation (2 marks)
 - iv. Smart city (2 marks)
 - v. Incremental innovation (2 marks)
- b) Explain five drivers of environmental innovations (10 marks)
- c) Citing relevant 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 technology

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

QUESTION THREE (20 MARKS)

- a) Discuss five core elements of social innovation (10 marks)
- b) Discuss five roles of social innovation in environmental protection (10 marks)

QUESTION FOUR (20 MARKS)

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

- a) Smart cities (5 marks)
- b) Bio-energy technologies (5 marks)
- c) Solar lighting 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)