



MACHAKOS UNIVERSITY

University Examinations for 2017/2018 Academic Year

SCHOOL OF ENVIRONMENT AND NATURAL RESOURCES MANAGEMENT

DEPARTMENT OF ENVIRONMENTAL SCIENCES

FOURTH YEAR SECOND SEMESTER EXAMINATION FOR BACHELOR OF
ENVIRONMENTAL STUDIES (RESOURCE CONSERVATION)

ENS 433 ENVIRONMENT AND BIOTECHNOLOGY

DATE: 15/12/2017

TIME: 8.30-10.30 AM

Instructions:

Answer ALL questions in section A and ANY TWO questions in section B

SECTION A

1. a). Explain the following terms:
 - i. Bioremediation (2 marks)
 - ii. Tissue culture (2 marks)
 - iii. Genetic engineering (2 marks)
 - iv. Genomics (2 marks)
- b). Describe the biochemical composition and structure of deoxyribonucleic acid (4 marks)
- c). Explain any **two** factors that determine the success of plant grafting. (4 marks)
- d). Explain **five** practical applications of Plant Tissue Culture. (10 marks)
- e). Giving example, explain **one** application of cloning in conservation of natural resources (4 marks)

SECTION B

2. Discuss the role of biotechnology in the management of municipal wastes in developed countries (20 marks)
3. Discuss two aquaculture methods practiced in Kenya and their effects to the environment (20 marks)
4. Discuss the Kenyan Biosafety Act of 2009 in relation to applications for approval and risk assessment of Genetically Engineered crops (20 marks)
5. Using examples, discuss the impacts of Genetically Modified Organisms (GMOs) on natural environment (20 marks)