MACHAKOS UNIVERSITY

University Examinations for 2016/2017

SCHOOL OF AGRICULTURE AND NATURAL RESOURCES MANAGEMENT

DEPARTMENT OF AGRICULTURAL EXTENSION AND EDUCATION

FIRST YEAR SECOND SEMESTER EXAMINATION FOR BACHELOR OF SCIENCE IN AGRICULTURAL EDUCATION AND EXTENSION

ERC 107: INTRODUCTION TO AGRO ECOSYSTEMS AND NATURAL RESOURCES

DATE: 5/6/2017 **TIME: 2 HOURS**

Instructions:

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

SECTION A: 30 MARKS

QUESTION ONE (COMPULSORY) (30 MARKS)

a) Define the term ecosystem and give its essential abiotic components (6 marks)

b) State six techniques of an agro-ecosystem which bring about biomass production and good humus management (6 marks)

c) Outline any three management practices aimed at maintaining soil nutrients in farming agro-ecosystems (6 marks)

d) Discuss three factors that contribute to loss of biodiversity (6 marks)

e) Define the terms "Blue water" and "Green water" (6 marks)

SECTION B: ANSWER ANY OTHER TWO QUESTIONS (40 MARKS)

QUESTION TWO (20 MARKS)

a) Describe, giving examples, the two main categories of man-made ecosystems (4 marks)

b) Outline the characteristics of agro ecosystems that distinguish them from natural ecosystems (10 marks)

c) List six human-induced soil degradations (6 marks)

QUESTION THREE (20 MARKS)

a) Agro-ecosystems are globally characterized into three groups. Name and discuss the characteristics of each group (12 marks)

b) In agro-ecosystem farming practices are aimed at contributing to different goals. State the four goals of sustainable agriculture and give the farming practices carried out in order to achieve these goals (8 marks)

QUESTION FOUR (20 MARKS)

a) Give three reasons why wild plant and animal species are considered to be important habitats in agro-ecosystem (6 marks)

b) As an environmentalist in Machakos County one of your major concerns is to contribute to improved water availability for agricultural production and conservation of biodiversity in adaptation to impacts of climate change. Discuss seven agro-ecosystem practices that you would employ in order to improve water use and watershed management in the county (14 marks)

QUESTION FIVE (20 MARKS)

a) Imagine you are the County Environment Director. You are required to address a group of agricultural producers in your area on how they can conserve and manage biodiversity and ecosystem services while at the same time producing enough food to counter food insecurity in the county. Outline the main agro-ecosystem practices that you would include in your speech (15 marks)

b) State five practices that can be adopted in the mitigation of agricultural GHG emissions. (5 marks)