



**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY  
SCHOOL OF AGRICULTURE, FOOD SECURITY AND BIODIVERSITY  
DEPARTMENT OF AGRICULTURAL ECONOMICS AND EXTENSION**

**FINAL FIRST YEAR FIRST SEMESTER UNIVERSITY EXAMINATIONS FOR THE  
DEGREE OF MASTER OF SCIENCE IN AGRICULTURAL AND EXTENSION  
EDUCATION (MSc-AEE) 2013/14 ACADEMIC YEAR**

**CENTRE: MAIN CAMPUS**

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**COURSE CODE: AAE-5114**

**COURSE TITLE: AGRICULTURAL PRODUCTION SYSTEMS**

**EXAM VENUE: LR 4**

**STREAM: MSc. AGEED**

**DATE: 31/08/16**

**EXAM SESSION: 2.00 – 5.00 pm**

**TIME: 3 HOURS**

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**Instructions:**

- 1. Answer question 1 ( compulsory ) and ANY other 3 questions.**
- 2. Candidates are advised not to write on the question paper.**
- 3. Candidates must hand in their answer booklets to the invigilator while in the examination room.**

## **SECTION A = 15 MARKS**

Q1. Agriculture is the most important sector in many developing countries and is central to the survival of millions of people. Most agriculture production in these countries involves small land holdings, mainly producing for self-consumption

- a) Describe how “Building healthy soils” and “Building resilience through diversity” would be employed as interventions in ecological agriculture to meet climate change challenges **(4 Marks).**
- b) Discuss in details any four (4) of the essential elements considered crucial in moving towards climate resiliency **(4 Marks).**
- c) Briefly discuss any four (4) examples of the role played by ecology in our lives **(4 Marks).**
- d) Explain three (3) essential factors used in defining an agro-ecological zone or cell. **(3 Marks).**

## **SECTION B = 45 MARKS**

**ANSWER ANY THREE QUESTIONS IN THIS SECTION.**

Q2. The diversity of agricultural conditions across Africa invites a deeper understanding and analysis of the farming systems to inform evidence-based policy and decision making.

- a) Briefly discuss any five (5) major farming systems of Africa **(5 Marks).**
- b) State and briefly explain the five (5) main strategies considered as pathways out of poverty to improve farm household livelihoods **(5 Marks).**
- c) Define the following Agricultural Production System terminologies\*
  - i. Trophic level
  - ii. Niche
  - iii. Environmental resistance
  - iv. Mutualism
  - v. Habitat fragmentation

**1 Mark each**

Q3. Farmers typically perceive their farms, whether small subsistence units or large corporations, as complex and risky ‘systems’ and actively manage the farms to achieve family goals, including household food security and livelihoods

- a) With the help of a schematic, depict farm household decision-making: Connecting resources, production, consumption and investment **(7 Marks).**
- b) Briefly discuss four (4) common challenges and policy implications across farming systems **(4 Marks).**
- c) Give a distinction between the terms: Biodiversity; Genetic diversity; and Ecosystem diversity. **(4 Marks).**

Q4. It is instructive to examine the distribution of rural poverty across the farming systems. The major part of rural poverty -- and food insecurity – is located in six farming systems and in broad terms, there are five main strategies to improve farm household livelihoods

- a) Briefly discuss any four (4) of the main strategies considered to improve farm household livelihoods **(4 Marks).**
- b) State and describe factors considered in the classification of major categories of the farming systems **(5 Marks).**
- c) Explain the fact that African food systems have developed in an entirely different way from other economies in recent decades **(6 Marks).**

Q5. Globally, the atmosphere and the oceans are warming. Atmospheric warming and melting of sea ice are altering the physical oceanography, while higher levels of atmospheric carbon dioxide (CO<sub>2</sub>) may alter ocean chemistry, all of which will have effects on the ecosystem.

- a) Discuss any four (4) driving forces on climate change and effects on ecosystems **(4 Marks).**
- b) Identify and briefly explain four (4) indicators of the impact of climate change **(4 Marks).**
- c) Distinguish between fragmentation effects on mutualistic and antagonistic interactions **(7 Marks).**