



JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF AGRICULTURAL AND FOOD SCIENCES

**FIRST YEAR FIRST SEMESTER UNIVERSITY EXAMINATION FOR THE DEGREE
OF DOCTOR OF PHILOSOPHY IN FOOD SECURITY AND SUSTAINABLE
AGRICULTURE**

2020/2021 ACADEMIC YEAR

REGULAR

COURSE CODE: AFB 6113
COURSE TITLE: Sustainable Natural Resource Management and Food Security
EXAM VENUE: STREAM: PhD Food Security and Sustainable Agriculture
DATE:17/2/21 EXAM SESSION:3.00-6.00 PM
TIME:3 HOURS

INSTRUCTIONS:

1. Answer all questions

Essay questions may have more than one correct answer. Ticking any correct answer will earn you a mark. Ticking any incorrect answer will subtract a mark

- 2. Candidates are advised to write on the text editor provided, or to write on a foolscap, scan and upload alongside the question**
- 3. Candidates must ensure they submit their work by clicking "finish and submit attempt" button at the end.**

1. i) Which of the following statements is not correct? **(3 marks)**
- a) In 1990 the world cereal prices rose dramatically as a result of agricultural subsidies from EU governments
 - b) There was a dramatic fall in cereal stocks the 1990 as a result of hunger in the horn of Africa
 - c) The global resource base declined dramatically in 1990
 - d) The global cereal production declined significantly in 1990 following increased production the previous year
 - e) The 1990 Asian crisis increased the global demand for food commodities
- ii) Which of the following is likely to occur by 2050? **(3 marks)**
- a) The world population is expected to rise to 9.6 B, being propelled by population growth in Africa
 - b) Availability for land is likely to decline due to rise in sea level caused by rising global temperatures
 - c) Declining land and water for agriculture are going to challenge the global food production systems
 - d) Significance of the international trade is expected to decline as local food production systems improve and governments enhance internal regulatory mechanisms
 - e) Consumption of meat is expected to rise due to better economic times in developing countries as a result increased wealth among the population
 - f) Massive rural to urban migrations are expected, creating enough land for Agriculture in Africa.
- iii) Which of the following statements is incorrect? **(3 mark)**
- a) Natural resources are derived from the earth and exist completely independent of human activity.
 - b) Natural resources generate utilities referred to as ecosystem services that underpin human existence and wellbeing and are the key links between natural resource conservation and food security.
 - c) Renewable resources are infinite and can be exploited indiscriminately as they replace themselves in the short run
 - d) Natural resources are governed according to property regimes attached to them on the basis of property rights held over them. The success of conservation of natural resources in Africa is due to strict adherence to these property rights
 - e) Promotion of sustainable natural resources and food security in Africa can be achieved through adoption of first generation biofuels
- iv) Which of the following definitions referring to Biofuels is incorrect? **(3 marks)**
- a) Their development has received increased attention as a means to mitigate climate change, alleviate global energy concerns and foster rural development.
 - b) They are currently classified into four generations, each of which contains a number of different fuel types
 - c) They come in a number of forms and meet a number of different energy needs.
 - d) They are fuels whose energy is obtained through a process of biological carbon fixation, predominantly photosynthesis

- e) Any hydrocarbon fuel that is produced from organic matter over a long period of time belongs to the group
- f) The current national and world market prices of biofuels are high due to high supply of feedstocks and competition from natural fuels
- v) In your own view, discuss how INSEFOODS program can enhance stability of food supply among households. **(3 marks)**
- vi) Discuss how globalization has promoted food insecurity in Africa. **(5 marks)**

- 2 a) With examples, classify natural resources based on their state of availability. **(4 Marks)**
- b) Natural resources are managed on the basis of property rights held over them. Briefly discuss “the commons” **(4 Marks)**
- c) Describe three livelihood strategies and how they impact on natural resources? **(4 marks)**
- d) Briefly explain the FOUR main goals of food security? **(4 Marks)**

e) What are ecosystem services? Briefly discuss three core ecosystem services lost as a result of soil degradation.

(4 Marks)

3 Agri-food sector is one of the global industries producing the most greenhouse gases, contributing to soil degradation, drinking water contamination, and run-off harming natural ecosystems. Using innovative, novel farming systems, discuss how you can sustainably produce food using fewer natural resources.

(20 marks)