



Strathmore
UNIVERSITY

STRATHMORE BUSINESS SCHOOL

MASTER OF MANAGEMENT IN AGRIBUSINESS

END OF SEMESTER EXAMINATION

MMA 8103: FARMING SYSTEMS

Date: Friday 2nd December 2022

Time: 3 Hours

Instructions

- This paper consists of **three sections**. Read **ALL** instruction for each section carefully before attempting any question.

Section I (20 marks): Answer **ALL** questions in this section

Question 1 (4 marks)

Briefly describe farming systems in your own words.

Question 2 (4 Marks)

Describe three ways by which plants take up nutrients from the soil.

Question 3 (6 Marks)

How do you understand the term trade and how should Africa respond to and take advantage of the existing opportunities and which ones are they?

Question 4 (6 Marks)

Irrigation is an important element for increasing crop productivity. Which opportunities exist for African farming systems to increase its food production and meet its food needs and economic growth?

Section II (40 Marks): Attempt any **FOUR** questions

Question 5 (10 Marks)

Typically, smallholder farming in Africa uses minimum fertilizers and agrochemicals. This has led to over exploitation of soils through excessive nutrient mining. Increasing soil organic matter is therefore crucial to yield improvement. How can smallholder farmers enhance soil fertility?

Question 6 (10 Marks)

Describe green technology and how it should be applied to the African Farming systems.

Question 7 (10 Marks)

Livestock production is a major economic and livelihood support activity of many people leaving in the vast grazing lands of Africa. How should Africa harness the opportunities presented by livestock production to its advantage both as a source of food and for economic growth?

Question 8 (10 Marks)

Africa has large tracts of ASALs (Arid and Semi-arid Land) that feed many people and finance livelihoods, which options are there to make these lands more productive and which are the problems associated with the productivity and the resilience of these lands?

Question 9 (10 Marks)

“Excessive use and misuse of pesticides result in contamination of surrounding soil and water sources, causing loss of biodiversity, destroying beneficial insect populations that act as natural enemies of pests and reducing the nutritional value of food” – Michael Fakhri, UN Special Rapporteur on the right to food. This loss of biodiversity necessitates the need to entrench integrated pest management (IPM) technologies. Describe the key steps of an IPM strategy. What incentives would drive a smallholder farmer to adopt an IPM strategy as opposed to any other alternative?

Question 10 (10 Marks)

Irrigation is a solution that provides more efficient water-use efficiency. Which are the important parameters an irrigation engineer needs to consider in the process of designing an irrigation system?

Section III (40 marks):

Answer only ONE of the two questions provided

Question 11 (40 Marks)

The Glasgow climate pact which was agreed at the United Nations Conference on Climate Change (COP26 summit) in November 2021 acknowledged that Smallholder farmers are the least emitters of greenhouse gases (GHGs), the most vulnerable to climate change and the least able to cope with its impacts. As countries aspire to reach net zero and limit temperature rise to 1.5°C, the importance of transformative innovation to facilitate increased adaptive capacity of smallholder agriculture cannot be gainsaid.

- a. Is the more than 70% of food is produced by smallholder farmers in Africa able to address food shortages on the continent-if yes discuss why if no, discuss why?
(10 Marks)
- b. How should climate neutral, emission-free, sustainable farming be developed?
(10 marks)
- c. What is your understanding of climate adaptation and climate mitigation? Give three examples of each these aspects.
(10 marks)
- d. What mitigation strategies would be sensible for Africa to adopt given a non-existent carbon market and lackadaisical commitments from the most polluting countries at the COP26 summit? What incentives would provide farmers with an impetus toward such mitigation?
(10 marks)

Question 12 (40 marks)

Establishing medium and large-scale crop production which is matched up with mechanization, irrigation and satellite communication technology are critical and may be inevitable to ensure food security and job creation in Africa. Discuss, giving relevant examples and supporting evidence. Is there a role for policy in such an undertaking?