STRATHMORE BUSINESS SCHOOL

MASTER OF MANAGEMENT IN AGRIBUSINESS

END OF SEMESTER EXAMINATION

MMA 8103: FARMING SYSTEMS

Date: Thursday 2nd December 2021 **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 (6 marks)

Briefly describe the economic, environmental and social elements of sustainability as applied to agricultural production?

Question 2 (4 Marks)

Organic farming is an agricultural system that maintains ecological balance. Qualify the statement

Question 3 (4 Marks)

What are the effects of globalization on African food systems?

Question 4 (6 Marks)

Why does climate change present a challenge for organic farming as practiced by smallholder farmers in Africa?

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

Question 5 (10 Marks)

Smallholder farmers in most of Africa practice organic farming, typically not using fertilizers and agrochemicals. This has led to over exploitation of soils through excessive nutrient abstraction. Increasing soil organic matter is therefore critical to yield improvement. How can smallholder farmers enhance soil fertility?

Question 6 (10 Marks)

Describe two approaches beyond increasing productivity that may be applied to ensure African farming systems produce enough food for its burgeoning population.

Question 7 (10 Marks)

Global demand for meat has been expanding exponentially in the last decade. In Africa, most of the livestock resources are held in pastoral systems which cover vast lands which are much needed for agricultural production and settlement. This has seen an increase in conflicts between pastoral communities and settler communities. As urbanization rates increase in Africa, what should policy makers do with pastoral production systems?

Question 8 (10 Marks)

In the wake of the COVID-19 pandemic, most urban dwellers who lost their jobs and incomes resorted to agricultural enterprises to secure their livelihoods. Majority of the new entrants established low input integrated crop-livestock systems. Why would these low input production systems be more robust against the shocks and disruptions occasioned by the pandemic?

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)

What are cleaner production technologies in the context of agriculture? Describe the four elements that are the focus of the cleaner production technology discussions.

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 temperate rise to $1.5^{O}C$, the importance of transformative innovation to facilitate increased adaptive capacity of smallholder agriculture cannot be gainsaid.

a. Given that more than 70% of food is produced by smallholder farmers in Africa, what practical steps must be employed to guarantee the food security of Africa's growing population, in view of a highly variable climate? **(10 marks)**
b. What climate adaptation and clean technology solutions would be ideal to adopt for utilization in smallholder agriculture and how would they be sustainably implemented at minimal cost? **(20 marks)**
c. What mitigation strategies would be sensible for smallholder farmers in 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)

Establishment of large monoculture plantations with largescale mechanization and irrigation is critical and may be inevitable to ensure food security and job creation in Africa. Discuss, giving relevant examples and supporting evidence.