



**Strathmore**  
UNIVERSITY

**STRATHMORE BUSINESS SCHOOL**  
**MASTER OF MANAGEMENT IN AGRIBUSINESS**  
**END OF SEMESTER EXAMINATION**  
**MMA 8103: FARMING SYSTEMS**

**DATE:** Monday 27th January 2025

**TIME:** 3 Hours

**Instructions**

This paper consists of **THREE SECTIONS**.

Read **ALL** instructions for each section carefully before attempting any question.

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

**Question One (4 marks)**

- (i) (i) How do we visually distinguish between fertile and infertile soils? (ii) How does one improve the ability of a soil to provide more nutrients to a crop?

**Question Two (6 Marks)**

- (i) List four climate factors that affect crop yields.  
(ii) List four crop factors that contribute to increases in crop yields.  
(iii) List four soil factors that contribute to increases in crop yields

**Question Three (4 Marks)**

- (i) How does knowledge in farming systems help the farmer or farm manager?  
(ii) Describe in your words the meaning of the term “*system*” and how one understands the use of the term in the context of the definition of farming systems.

**Question Four (6 Marks)**

Irrigation is an important element for increasing crop yields. (i) List the four irrigation methods that you know of? (ii) What is your understanding of the term evapotranspiration?

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

**Question Five (10 Marks)**

- (a) Organic farming is progressively becoming very attractive to most consumers of agricultural produce. (i) What is your understanding of the term organic farming and (ii) briefly discuss four organic farming methods that you know of indicating their individual benefits and advantages.

- (b) What is your understanding of the difference between the terms (i) soil productivity and (ii) soil fertility?

**Question Six (10 Marks)**

- (i) In your own words and understanding, what do you understand by the term “*green technologies*” and their benefits in general.
- (ii) Briefly describe four methods used to prevent and manage soil erosion on the farm.

**Question Seven (10 Marks)**

- (i) How does parent materials affect soil formation?
- (ii) How does climate, rainfall and temperature affect soil formation?
- (iii) How does slope and relief affect soil formation?
- (iv) How does time affect soil formation?
- (v) How does organic vegetation affect soil formation?

**Question Eight (10 Marks)**

- (i) What is the meaning of animal breeding and how does it benefit livestock production and productivity?
- (ii) From your understanding, which are the reasons for lack of benefits from livestock keeping in Africa and more so from smallholder farmers?

**Question Nine (10 Marks)**

- (i) Which are the four types of livestock fodder that you know of?
- (ii) What do you feed to cows, goats, sheep and pigs for quicker fattening and higher economic benefits?
- (iii) Apart from food, which other economic and environmental benefits do humans draw from livestock farming?

**Question Ten (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 efficient irrigation system?

**Section III (40 marks):**

**Answer only ONE of the two questions provided**

**Question Eleven (40 Marks)**

- a. From your own understanding, Africa historically predominantly depended on shifting cultivation. Is this form of farming system still sustainable? If yes, explain how and why and if no, which are the other existing farming system options explaining how they differ from each other. **(10 Marks)**

- b. What do we mean by water intense systems and which ones are most suited to intensive production systems in the urban areas and why? **(10 marks)**
  
- c. Carbon dioxide and methane are considered to be the most hazardous gaseous emission contributing to global warming and climate change. Discuss the sources of the CO<sub>2</sub> emissions how carbon dioxide should be managed for better outcomes for the planet when dealing with the hazards of climate change considering that carbon dioxide contributes 75% of the associated risk. **(10 marks)**
  
- d. From your understanding of soil fertility, describe which other methods are used to increase soil fertility apart from the use of inorganic or mineral fertilizers? **(10 marks)**

**Question Twelve (40 marks)**

If you are given 50 hectares of land in a semi-arid environment and asked to make it productive and earn you millions of shillings from it, what would you do to ensure that the land becomes sustainably productive and earn you the required amounts of money? Describe the challenges, the opportunities as well as solutions.