



SIR ARTHUR LEWIS COMMUNITY COLLEGE
FACULTY OF AGRICULTURE AND TOURISM
ACADEMIC YEAR (2024/2025) – SEMESTER ONE
END OF SEMESTER FINAL EXAMINATION

COURSE CODE : ARG214
COURSE TITLE : Agricultural Engineering
LECTURER(S) : Germain Ambrose
DATE : Thursday 19th December 2024
TIME : 9:00AM
DURATION : 2 Hours
STUDENT ID # : _____

GENERAL INFORMATION AND INSTRUCTIONS

This paper consists of **Two Sections**.

Section ONE consist of TEN (10) multiple choice questions. Answer on answer sheet provided. Use the answer sheet provided.

Section TWO consist of THREE (3) questions. **Answer all questions**. Each question is worth a total of TEN (10) MARKS.

- **Students must sign IN and OUT on the examination class list.**
- **Write your ID number on the question paper.**
- **This paper has 10 multiple choice questions.**
- **Circle the correct answer on the question paper.**

DO NOT TURN THIS PAGE UNTIL YOU ARE TOLD TO DO SO

SECTION ONE

Section ONE consist of TEN (10) multiple choice questions. Answer on answer sheet provided. Each question is one mark.

1. Institutional support is a hindrance to mechanization in Saint Lucia due to:
 - A) The suitability of precision mechanization for the region
 - B) The introduction of automatic devices in processing
 - C) A lack government training, technicians and mechanic services
 - D) Use of advanced agricultural machinery in production

2. Precision agriculture is best associated with which production system:
 - A) Automotive mechanisation
 - B) Intensive agricultural production
 - C) Permaculture
 - D) Extensive agricultural production

3. The internal combustion engine of hand held string trimmers are cooled using
 - A) Air only
 - B) Water only
 - C) Air and water
 - D) Fans

4. This agricultural building is associated with undertaking the Marketing Concept of Form Utility for animal food commodities before it reaches the final customer
 - A) Abattoir
 - B) Farm house
 - C) Nursery
 - D) Greenhouse

5. Precipitation caused as a result of air masses striking a topographical feature, especially a mountainous ridge is called
 - A) Orographic precipitation
 - B) Convective precipitation
 - C) Cyclonic precipitation
 - D) El Nino

6. This graph is used to estimate the likelihood or probability that a storm of a specific category will occur
 - A) Psychrometric chart
 - B) Hydrograph
 - C) Intensity –frequency –duration curve
 - D) Soil textural triangle

7. The easiest method for determination of average areal precipitation over a catchment or basin is the:
 - A) Isohyetal method
 - B) Arithmetical method
 - C) Thiessen polygon method
 - D) Rain gauge

8. Energy obtained from biological processes such as anaerobic digestion is best associated with
 - A) Biofuel
 - B) Solar energy
 - C) Internal combustion engine
 - D) Photovoltaic

9. The phases involved in agricultural building include:

- A) Construction --- operation --- Planning --- design
- B) Planning --- design --- construction --- operation --- maintenance
- C) Planning --- design --- construction --- operation
- D) Planning --- construction --- operation --- maintenance

10. The best orientation for wind breaks is:

- A) Perpendicular to wind direction
- B) Northeast
- C) Parallel to wind direction
- D) At the entrance of the farm stead

SECTION TWO

Answer all questions. Begin each question on a NEW sheet of paper please. Please show ALL working and units.

Question One

- A) State **TWO (2)** benefits the Sir Arthur Lewis Community College farm may derive from investing in mechanization of the farm enterprises. [2 marks]
- B) State **ONE (1)** limitation the Sir Arthur Lewis Community College farm may encounter in their efforts to mechanize. [1mark]

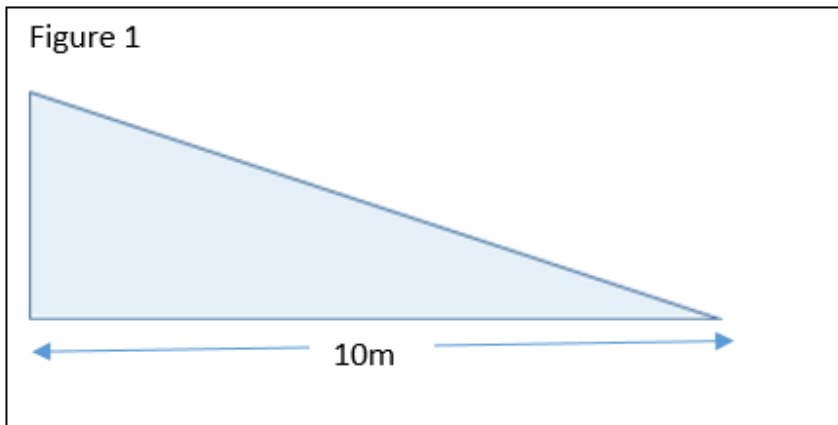


Figure 1 above represents a ramp. This figure has a calculated area of 30 m^2

- C) Calculate the **mechanical advantage** provided by the ramp. Please show all working clearly and neatly. [5 marks]
- D) Name the **simple machine** which is a **second class lever** used to transport materials on construction sites. [1mark]
- E) Name the **simple machine** used to hoist the national flag of Saint Lucia. [1mark]

Total 10 marks

Question Two

- A) State the **TWO (2)** functions of a wind break. [2 marks]
- B) State **TWO (2)** reasons for proper ventilation for the broiler pen on the Sir Arthur Lewis Community College farm. [2 marks]
- C) There are three major categories of loads which buildings experience. State **ANY TWO** and give **ONE EXAMPLE** for each. [4 marks]
- B) Briefly state the reason for having **slatted floors** in the goat and sheep pen at the Volet Agricultural Station. [1mark]
- E) Name the **type of foundation** which supports the broiler pen on the Sir Arthur Lewis Community College farm. [1mark]

Total 10 marks

Question Three

- A) Briefly state **TWO** functions of the retention pond which is located at George V Park in Castries central. **[2 marks]**

- B) State **TWO** mitigation strategies that may be adopted to reduce the negative impacts of climate change for agricultural production in Saint Lucia. **[2 marks]**

- C) State **TWO** advantages of drip irrigation for agricultural production **[2 marks]**

- D) The table below represents a drainage basin with data from rain gauge stations in **mm** of rainfall.

Station	Rainfall (mm)
A	5.5
B	4.5
C	3.0
D	4.7
E	5.8

- i) Calculate the **Areal rainfall** of this drainage basin. Clearly **state the method** you used. Please include units. **[2 marks]**

- ii) The surface area of the drainage basin is **one meter squared**. Calculate the **volume of water** in the drainage basin. **[2 marks]**

Total 10 marks