



SIR ARTHUR LEWIS COMMUNITY COLLEGE
DIVISION OF AGRICULTURE



GENERAL AGRICULTURE - CERTIFICATE
ACADEMIC YEAR 2013/2014
END OF SEMESTER TWO EXAMINATIONS

#F31

Course: BFM107 - Basic Farm Machinery/Buildings

Date: 6th May 2014

Time: 9:00 a.m.

Duration: Time 2 ½ Hrs

- Instructions:** 1. This paper consists of five questions ANSWER ANY FOUR (4) QUESTIONS.
2. Read carefully and begin each new question on a new page.

1. Agricultural mechanisation has resulted in improved sustainability of crop production.
- Define the term "Agricultural mechanization." [2]
 - Differentiate between the cycle of combustion of a petrol engine and a diesel engine. [4]
 - In the table below compare the two stroke engines with four stroke engines.

Particulars	Four stroke engines	Two stroke engines
No. of power strokes per revolution		
Fuel consumption		
Durability		

- State ONE function of the: i) piston ii) Flywheel [2]
- State TWO reasons why cooling systems are critical to four stroke engines. [4]
- State ONE way in which the efficiency of a knapsack sprayer can be improved. [2]

Total 20 marks

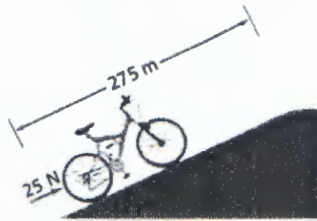
2. High tunnels are an integral part of food production systems in many parts of the Caribbean.
- Name the type of plastic generally used as the roofing material in high tunnels. [1]
 - Explain THREE reasons why this type of plastics is an ideal roofing material for high tunnels and nurseries. [6]
 - Explain the significance of proper orientation in the locating of greenhouses (**high tunnels**) in the Caribbean. [3]
 - Discuss TWO other important factors one should consider when selecting a location for a high tunnel. [6]
 - State TWO advantages and TWO disadvantages of growing crops in high tunnels over open field production. [4]

Total 20 marks

3. A rod is being used as a lever as shown in the figure below. The fulcrum is 1.2 m from the load and 2.4 m from the applied force. If the load has a mass of 18.6 kg:



- a) Determine the force which must be applied to lift the load? [2]
- b) Determine the mechanical advantage of the lever. (**Consider the force of gravity to 10 m/s^2**). [2]
- c) A bicycle rider pushes a bicycle that has a mass of 13 kg up a steep hill. The incline is 25° and the road is 275 m long, as shown in below. The rider pushes the bike parallel to the road with a force of 25N. Determine the mechanical advantage of the incline plane. [4]



- d) Supposing you have to lift a bag of cement which weighs 50kg using the pulleys below, determine the minimum effort that would be required to raise the bag of cement in each case. (Assume friction is negligible).
- I. Determine the mechanical advantage in each case. [2]
 - II. What length of the rope that must be pulled to lift the load 2m above the ground in each case? [4]



fig 1

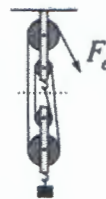


fig.2

- e) State the functions of any **TWO** components of a drip irrigation system. [4]
- f) Explain to a farmer **TWO** reasons why he should use a drip irrigation system over a sprinkler system. [4]

Total 20 marks

4. 'Agricultural mechanization to promises to play a critical role in promoting higher agricultural output in ACP countries'.

- a) Do you agree with the statement above? Give **THREE** reasons. [6]
- b) Discuss **THREE** factors that hinder the wider use of Agricultural machinery in St. Lucia. [6]
- c) Explain how the liquid cooling system operates on tractors. [4]
- d) Describe how the fuel system of a tractor operates. [4]

Total 20 marks

5. The picture below (figure 1) represents a poultry production shelter for a particular small scale farmer in your community.

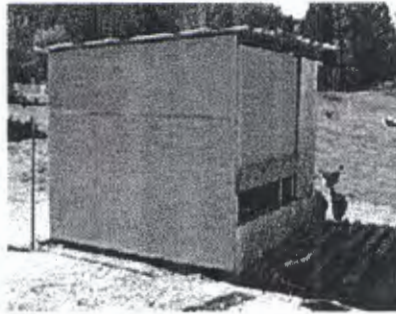


Figure1.

- a) List **TWO** types building materials used in the construction of chicken coops locally. [2]
- b) Identify **THREE** shortcomings of the building above as it relates to poultry and discuss their implications for successful commercial egg production. [3]
- c) Propose **THREE** improvements that could be made to the structure above. Give reasons for the changes that you recommend. [9]
- d) State **THREE** requirements of a good foundation. [6]

Total 20 marks

