FORM TP 2019044

TEST CODE **01202030**

MAY/JUNE 2019

CARIBBEAN EXAMINATIONS COUNCIL

CARIBBEAN SECONDARY EDUCATION CERTIFICATE® EXAMINATION

AGRICULTURAL SCIENCE (Double Award)

Paper 03 – General Proficiency

2 hours

READ THE FOLLOWING INSTRUCTIONS CAREFULLY.

1. This paper consists of SIX questions in three sections. Answer ALL questions.
2. Write your answers in the spaces provided in this booklet.
3. Do NOT write in the margins.
4. You may use a silent, non-programmable calculator.
5. If you need to rewrite any answer and there is not enough space to do so on the original page, you must use the extra lined page(s) provided at the back of this booklet. **Remember to draw a line through your original answer**.
6. **If you use the extra page(s) you MUST write the question number clearly in the box provided at the top of the extra page(s) and, where relevant, include the question part beside the answer.**

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

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Sequential Bar Code

Section I: Entrepreneurship and Communication

Answer ALL questions in this section.

Write your answers in the spaces provided in this booklet.

1. Case Study

Maggie has owned a 50-head pig farm enterprise for the past three years. She works with the Ministry of Health during the week and goes to her farm on Saturdays only. Two casual labourers manage the day-to-day operations of the farm. Maggie has been noticing that the pigs have a high mortality rate due to frequent outbreaks of diseases on the farm. On a recent visit to the farm, a neighbour told her that the workers are rarely on the farm.

Maggie has submitted all her financial records to an accountant. The accountant produces a financial statement showing that the enterprise has made no profits over the three-year period. Other records show that input costs have been increasing and sales have been decreasing. Maggie's biggest customer has recently advised her that he will no longer be purchasing her pigs.

(a) (i) Based on the information in the case, identify TWO factors that are negatively affecting the performance of Maggie's pig farm enterprise.

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(2 marks)

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(ii) Explain TWO ways by which Maggie can improve the performance of her pig farm enterprise.

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(b) Jordan produces lettuce and tomatoes on his one-hectare farm. He wants to sell his produce to a large hotel chain on his island. His friend advises him to send an email to the hotel's purchasing manager indicating that he wants to sell his produce to the hotel.

(i) Advise Jordan of ONE advantage and ONE disadvantage of using email as a communication tool for contacting the hotel's purchasing manager for the first time.

Advantage .....

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Disadvantage .....

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(2 marks)

(ii) Identify TWO other appropriate communication channels that Jordan can use to contact the hotel's purchasing manager.

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(2 marks)

Total 10 marks

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NOTHING HAS BEEN OMITTED.

2. A group of farmers approach their extension officer seeking advice on the formation of a farmers' cooperative. The extension officer explains that in forming a cooperative, the farmers must adhere to the guiding principles of a cooperative. He also indicates that there are many benefits to the farmers in forming such a business venture.

(a) (i) State TWO guiding principles of a farmers' cooperative.

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(2 marks)

(ii) Outline TWO benefits to be derived by the farmers from being members of the cooperative.

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(b) Describe THREE problems that the farmers are likely to encounter in managing the farmers' cooperative.

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(6 marks)

Total 10 marks

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SECTION II: Crop Management Technologies

Answer ALL questions in this section.

Write your answers in the spaces provided in this booklet.

3. Figure 1 shows the monthly rainfall data collected for a Caribbean country over a one-year period.

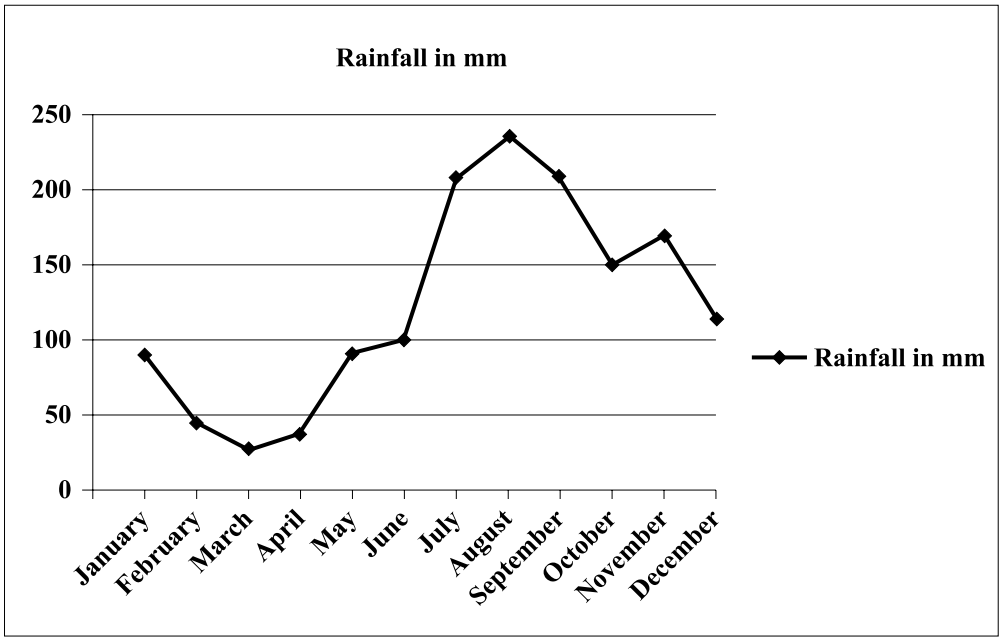


Figure 1. Monthly rainfall (mm) for a Caribbean country

(a) (i) State the name of the instrument used to measure the amount of rainfall over the period.

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(1 mark)

(ii) In which month was the lowest amount of rainfall recorded?

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(1 mark)

(iii) How much rainfall was recorded in the month of June?

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(1 mark)

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(b) Farmer Greg wants to plant his tomato crop during the period July to September.

(i) Based on the graph **on page 10**, identify the season that occurs during this period.

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(1 mark)

(ii) Explain TWO problems Farmer Greg may encounter in producing tomatoes in the field during this period.

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(4 marks)

(iii) Suggest TWO ways Farmer Greg can overcome the problems identified in (b) (ii).

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(2 marks)

Total 10 marks

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4. (a) The sweet potato weevil (*Cylas formicarius*) is a major pest of sweet potatoes in the Caribbean. An experiment was conducted on the use of traps and insecticide on the control of sweet potato weevil. Table 1 shows the results of the experiment.

TABLE 1: CONTROL OF SWEET POTATO WEEVIL USING DIFFERENT METHODS

	Insect Trap	**Insecticide**	**Insect Trap and Insecticide**
Number of dead sweet potato weevils	5000	1000	6100

(i) State ONE conclusion that can be drawn from the results of the experiment on the control of the sweet potato weevil presented in Table 1.

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(1 mark)

(ii) State the TWO types of pest control methods used in the experiment.

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(iii) Explain TWO other methods that farmers can use to control sweet potato weevils in the field.

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(4 marks)

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(b) Farmer Noel produces okra for the export market. He wants to use a pesticide to treat his okra crop to guard against pest damage. Figure 2 shows the label of the pesticide bottle.

NIFTY BUG KILLER

Active Ingredient: Carbaryl — 50%

For use in turf, trees, ornamentals, fruit, vegetable crops

Provides control of over 130 ornamental and turf pests including caterpillars grasshoppers and leaf cutting ants

Application Rate:
For vegetable crops, apply 100 ml per hectare

KEEP OUT OF REACH OF CHILDREN

Figure 2. Pesticide bottle label

Based on the information on the label,

(i) state the type of pesticide contained in the bottle

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(1 mark)

(ii) calculate the amount of pesticide that should be applied to a plot of okra measuring 20 m by 10 m.

(2 marks)

Total 10 marks

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SECTION III: Animal Management Technologies

Answer ALL questions in this section.

Write your answers in the spaces provided in this booklet.

5. On a recent field trip to Pooran's Poultry Farm, it was observed that most of the one-week old chicks in the brooder sat on wet litter and huddled directly under the light.

(a) Suggest TWO likely causes of this observation and outline ONE management practice that the farmer can use to address **each** of these causes.

Cause .....

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Management practice .....

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Cause .....

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Management practice .....

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(4 marks)

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(b) Farmer Pooran wants to expand his farm to include pigs. He attends a pig production training programme hosted by the Ministry of Agriculture. He is advised that when sows are due to give birth they must be housed properly in order to ensure optimal piglet survival.

Figure 3 shows the specialized equipment Farmer Pooran would need to install to house a sow that is due to give birth.

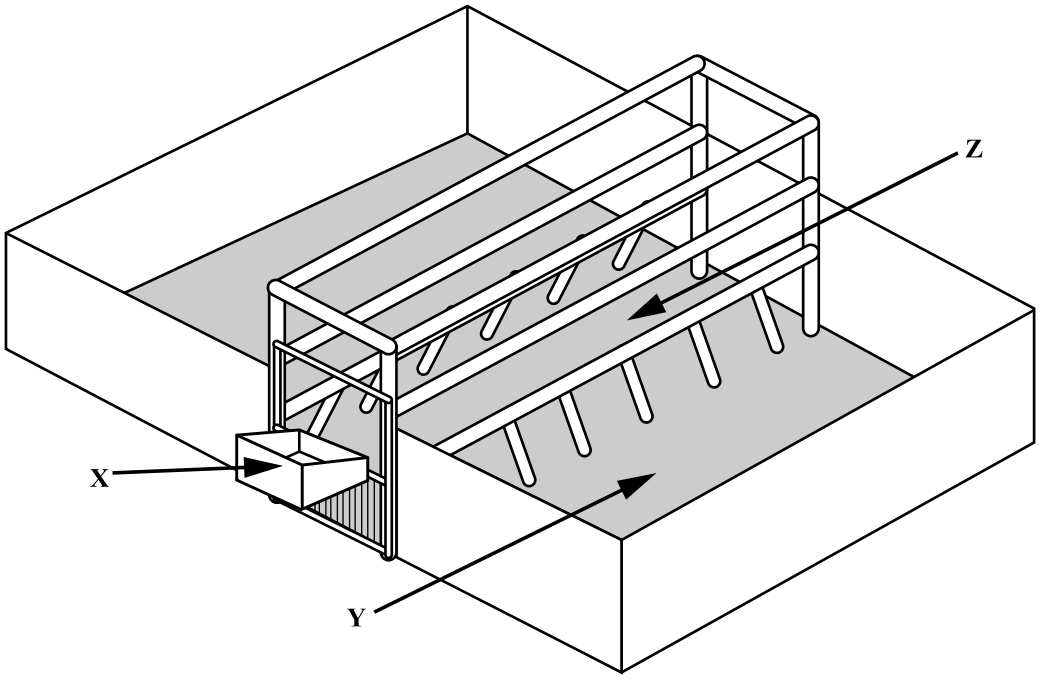


Figure 3. Specialized equipment used to house a sow

(i) State the name of the piece of equipment shown in Figure 3.

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(1 mark)

(ii) Identify the part labelled X.

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(1 mark)

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(iii) In which area, X, Y or Z, would the sow be located? Suggest ONE benefit of placing the sow in this area.

Area located .....

Benefit .....

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(2 marks)

(c) Farmer Avril visits Farmer Pooran's farm and observes that there are no heat lamps installed. She advises him to install heat lamps before the piglets are born.

Explain ONE reason for providing heat lamps to the newborn piglets.

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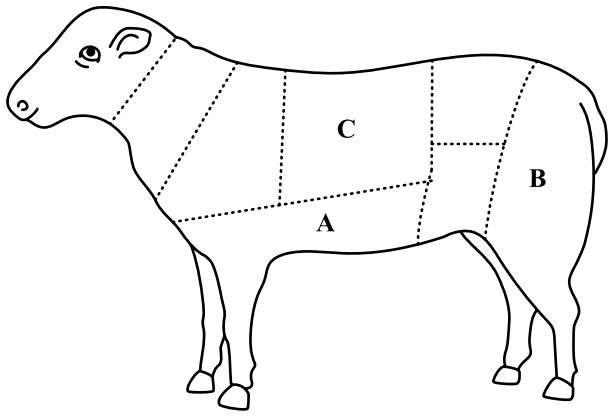
(2 marks)

Total 10 marks

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6. (a) Figure 4 shows the cuts of mutton.



Identify the parts (cuts) labelled A, B and C.

A .....

B .....

C .....

(3 marks)

(b) Josh sells mutton to a popular local restaurant. Customers have been complaining about the quality of mutton served in the restaurant. Josh has been asked to improve the quality of mutton he supplies to the restaurant.

Describe THREE characteristics that the mutton provided to the restaurant must possess in order for it to be classified as high quality meat.

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(3 marks)

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(c) On a field trip to a local slaughterhouse, the veterinary public health inspector indicated that HACCP plays an important role in ensuring the provision of safe meat for human consumption.

(i) Identify TWO potential food safety hazards in the slaughterhouse, which could result in an adverse health impact on consumers.

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(2 marks)

(ii) Suggest ONE way of controlling each hazard identified in (c) (i).

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(2 marks)

Total 10 marks

END OF TEST

IF YOU FINISH BEFORE TIME IS CALLED, CHECK YOUR WORK ON THIS TEST.

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