FORM TP 2015304

TEST CODE **01203022**

MAY/JUNE 2015

CARIBBEAN EXAMINATIONS COUNCIL

CARIBBEAN SECONDARY EDUCATION CERTIFICATE® EXAMINATION

AGRICULTURAL SCIENCE (Single Award)

General Proficiency

Paper 02

2 hours

READ THE FOLLOWING INSTRUCTIONS CAREFULLY.

1. There are NINE questions in this booklet, SIX in Section I and THREE in Section II. Answer ALL questions.
2. Each question in Section I carries 4 marks. Each question in Section II carries 12 marks.
3. Do NOT write in the margins.
4. Write your answers in the spaces provided in this booklet.
5. You may use a silent, non-programmable calculator.
6. 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 page(s) provided at the back of this booklet. **Remember to draw a line through your original answer**.
7. **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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SECTION I

Answer ALL questions in this section.

1. (a) In urban communities, people often use containers to grow vegetables, condiments and medicinal plants.

State TWO advantages of using containers to cultivate these plants.

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(2 marks)

(b) Figure 1 shows a cross section of a container used for growing vegetable crops.

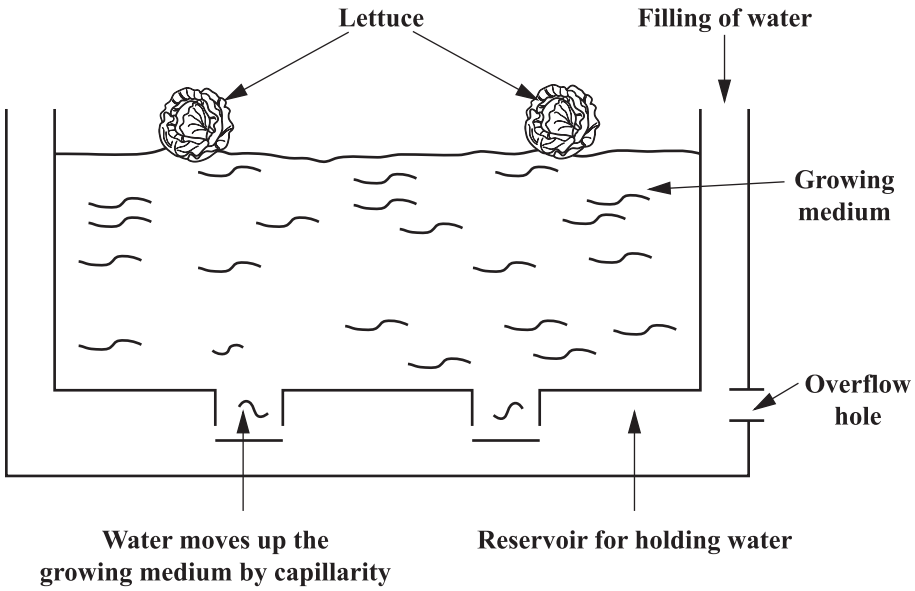


Figure 1. Cross section of a container used for growing vegetable crops

Suggest TWO ways of modifying this system of growing lettuce for greater efficiency.

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(2 marks)

Total 4 marks

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2. (a) Identify TWO advantages of using agricultural credit unions as a source of capital.

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(2 marks)

(b) Janet went to the National Agricultural Marketing Agency to enquire about exporting her vegetable crops. The marketing officer indicated that based on the records provided, she was **not ready** for the export market.

TABLE 1: JANET'S CROP PRODUCTION RECORD FOR 2013

Month	Crop	Quantity (kg)
January	Tomato	1000
February	Melongene	250
May	Tomato	700
August	Sweet pepper	500
October	Melongene	450

Study the data in Table 1 and provide TWO reasons to justify the marketing officer's decision.

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(2 marks)

Total 4 marks

3. (a) With reference to soil pH, explain the difference between acidic and alkaline soils.

Acidic soils .....

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Alkaline soils .....

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(2 marks)

(b) A farmer observes that his crop of watermelons has small, hook-shaped leaves at the tip of the vines, which indicates a lack of calcium.

Explain how this lack of calcium is likely to affect the yield of watermelons.

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(2 marks)

Total 4 marks

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4. (a) Tomato, sweet pepper and melongene are normally propagated by sexual propagation.

(i) State what is meant by the term 'sexual propagation'.

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(1 mark)

(ii) Identify ONE advantage of sexual propagation.

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(1 mark)

(b) A citrus farmer switched from using inorganic to organic insecticide. After two years he observed an increase in the bee population in his orchard.

Explain how an increase in the bee population is likely to affect citrus production.

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(2 marks)

Total 4 marks

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5. (a) Figure 2 shows a section through a hen's egg.

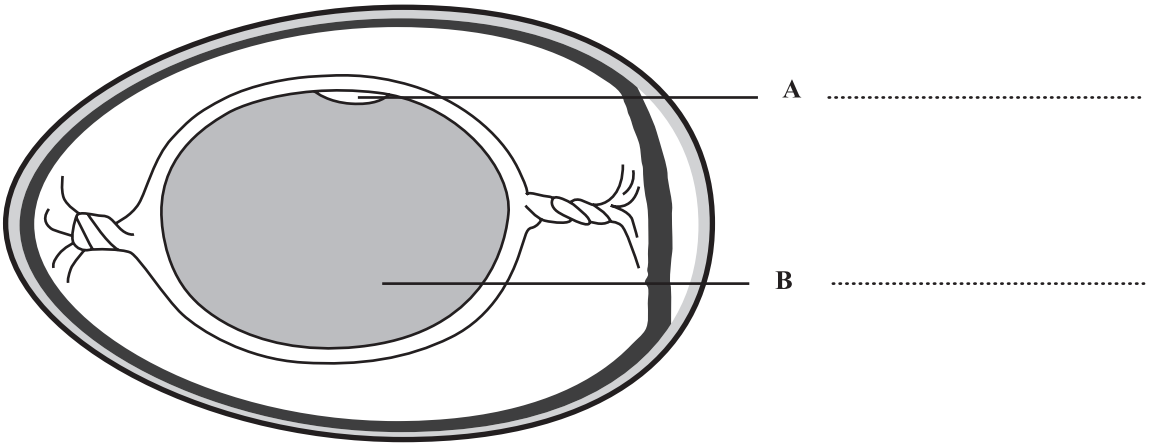


Figure 2. Section through a hen's egg

Identify the parts labelled **A** and **B** in Figure 2. Write your answers in the spaces provided in Figure 2. **(2 marks)**

(b) The shell of a hen's egg is thin and cracks easily.

(i) Suggest how this is likely to affect the marketability of the egg.

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(1 mark)

(ii) Suggest ONE way by which this problem can be eliminated.

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(1 mark)

Total 4 marks

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6. Table 2 shows information on the FCR for two breeds of broiler birds that are fed the same type of ration over an eight-week period.

TABLE 2: FCR FOR TWO BREEDS OF BROILER BIRDS

Breed of Broiler	Quantity of Ration Fed per Bird (kg)	Average Live-weight per Bird (kg)	FCR
Colbert	5	2.5	2
Yanick	7.5	3	?

(a) What does the acronym 'FCR' mean?

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(1 mark)

(b) Calculate the value of the FCR for the **Yanick** breed, using the information in Table 2.

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(1 mark)

(c) Indicate which of the two breeds of broiler birds has the better FCR and explain your answer.

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(2 marks)

Total 4 marks

SECTION II

Answer ALL questions in this section.

7. (a) Explain the meaning of the term 'gross farm income'.

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(1 mark)

(b) Distinguish between variable cost and fixed cost.

Variable cost:

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Fixed cost:

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(2 marks)

(c) Table 3 shows the information for Farmer Broderick's 100–unit broiler farm.

TABLE 3: INCOME AND EXPENSES FOR BROILER FARM

Descriptor	Amount ($)
Average weight per kg of bird	2 kg
Selling price per kg of bird	$20
Number of birds	100
Total Income	**4000**
Expenses	**$**
Depreciation	100
Feed	400
Interest on loan	300
Baby chicks	800
Utilities	200
Labour	700
Insurance	200
Total Expenses	**2700**

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Using the information provided in Table 3 on page 8:

(i) Identify TWO variable costs.

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(2 marks)

(ii) Identify ONE fixed cost.

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(1 mark)

(d) Farmer Broderick wants to increase the number of birds reared by 50 units. As a result, his variable costs will increase by $1500. Calculate, stating the formula in EACH case:

(i) His additional income

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(3 marks)

(ii) The change in net profit

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(3 marks)

Total 12 marks

8. (a) Moulding is a crop management practice recommended by extension officers under certain conditions.

(i) State what is meant by 'moulding'.

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(1 mark)

(ii) Identify TWO benefits of moulding.

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(2 marks)

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(b) Figure 3 shows two plant leaves, labelled A and B, which are affected by two different plant pests.



Leaf A **Leaf B**

Figure 3. Plant leaves affected by two different plant pests

(i) Identify EACH pest responsible for the damage shown in Leaf A and Leaf B.

Leaf A .....

Leaf B .....

(2 marks)

(ii) Explain TWO ways in which the damage caused by these pests can affect farm profitability.

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(2 marks)

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(iii) Suggest TWO ways by which these pests can be controlled.

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(2 marks)

(c) A dairy farmer wants to irrigate his pasture to increase the yield of grass.

(i) Which type of irrigation system should be recommended to this farmer?

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(1 mark)

(ii) Make a sketch of the **unique** components of the irrigation system recommended in (c) (i) above. Label any TWO parts.

(2 marks)

Total 12 marks

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9. Figure 4 represents a diagram of a tool used in beekeeping.

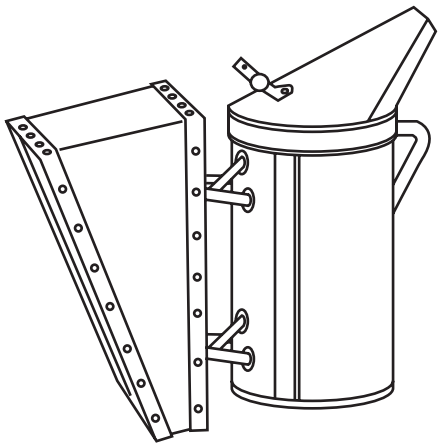


Figure 4. Tool used in beekeeping

(a) Identify the tool above and explain its use in the management of honey bees.

Name of tool .....

Use of tool .....

.....

(3 marks)

(b) Beekeeper Mark establishes an apiary in his backyard which is located adjacent to a commercial vegetable farm. The yield of honey from Mark's apiary is considerably lower than the national average for his country.

Suggest TWO reasons that may account for the low yield of honey in Mark's apiary.

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(2 marks)

(c) To increase the yield of honey, Mark mixed the honey with a sugar solution.

Explain how this is likely to affect the quality of his honey.

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(2 marks)

(d) Mark further observes that the bees in his apiary have become increasingly aggressive over time.

Suggest THREE reasons that may account for the increasingly aggressive behaviour of the bees.

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(3 marks)

(e) Suggest TWO management practices that could be followed to address this problem.

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(2 marks)

Total 12 marks

END OF TEST

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

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