

FORM TP 2015043



TEST CODE **01203020**

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) State TWO advantages of using a grow box system to cultivate vegetable crops.

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(2 marks)

- (b) Figure 1 shows a hydroponic system.

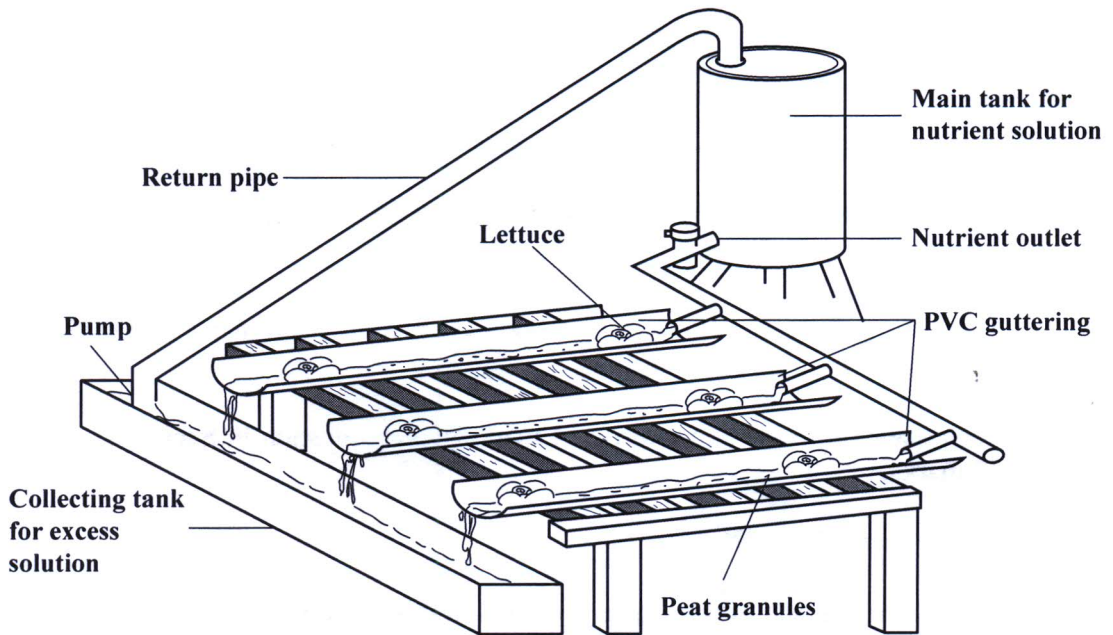


Figure 1. A hydroponic system

Suggest TWO ways in which the system could be modified for greater efficiency.

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(2 marks)

Total 4 marks

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2. (a) Describe TWO characteristics of an agricultural cooperative.

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(2 marks)

(b) Sue has been farming sweet potatoes for the past three years. Her farm business has been operating at a loss.

Advise Sue of TWO reasons why it may be difficult for her to obtain a loan from the bank to improve her business.

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(2 marks)

Total 4 marks

3. (a) Explain the difference between major nutrients and minor nutrients.

Major nutrients

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Minor nutrients

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(2 marks)

(b) A farmer realizes that his crop of pepper is suffering from a lack of magnesium because the leaves show yellowing between the leaf veins.

Explain how this lack of magnesium would affect plant growth.

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(2 marks)

Total 4 marks

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4. (a) Citrus is normally propagated by asexual propagation.

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

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.....
(1 mark)

(ii) Identify the asexual propagation method used to produce citrus plants.

.....
(1 mark)

(b) A recent report indicates that there is a decrease in the bee population in the Caribbean.

How is this likely to affect fruit production? Give a reason for your answer.

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(2 marks)

Total 4 marks



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

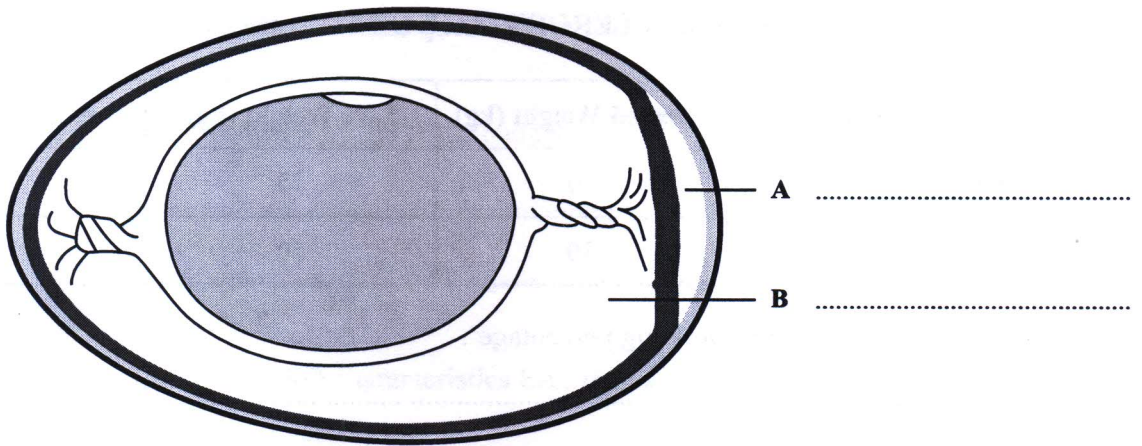


Figure 2. A section through a hen's egg

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

(b) Suggest **TWO** reasons why the feeding of genetically modified corn to layers can improve the quality of the eggs.

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(2 marks)

Total 4 marks



6. Table 1 gives information on the dressing percentage of two breeds of pig.

TABLE 1: DRESSING PERCENTAGE OF TWO BREEDS OF PIGS

Breed of Pig	Dressed Weight (kg)	Live Weight (kg)	Dressing Percentage
Large White	50	75	66
Landrace	30	50	?

(a) Define the term 'dressing percentage'.

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.....
(1 mark)

(b) Calculate the dressing percentage for the **Landrace** based on the information in Table 1. **Show your working.** **(1 mark)**

(c) Suggest **TWO** reasons why the dressing percentages are different in the two breeds of pig.

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(2 marks)

Total 4 marks

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SECTION II

Answer ALL questions in this section.

7. (a) (i) What is meant by the term 'budget'?

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(1 mark)

(ii) Compare TWO characteristics EACH of a partial budget and a complete budget.

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(2 marks)



(b) Table 2 shows information for Farmer Bekele's 1000 unit broiler farm.

TABLE 2: DATA ON FARMER BEKELE'S BROILER FARM

Descriptor	Amount
Income Items	
Number of birds	1000
Average weight per bird	2 kg
Selling price per kg of bird	\$10
Expenditure Items	
	\$
Baby chicks	800
Feed	400
Labour	700
Electricity for rearing broilers	200
Water for rearing broilers	300
Litter	100
Insurance	500
Depreciation	100
Taxes	200
Interest on loan	300

(i) Calculate the total revenue, using the information in Table 2. **Show your working.**

(1 mark)

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- (ii) Using the information provided in Table 2, complete Table 3 by writing the fixed costs and the variable costs in the appropriate spaces.
- (iii) Calculate the total fixed cost and the total variable cost. Write your answers in Table 3 in the appropriate spaces.

TABLE 3: FIXED AND VARIABLE COSTS

Fixed Cost	\$	Variable Cost	\$
Total		Total	

(6 marks)

- (iv) Calculate the gross margin using the information provided in Table 2 and Table 3. **State the formula in your working.**

(2 marks)

Total 12 marks



8. (a) Mulching is a crop production practice that is often recommended by extension officers.

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

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(1 mark)

(ii) Explain the difference between an organic and an inorganic mulch.

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(2 marks)

(b) Figure 3 shows a young cabbage plant which is damaged.



Figure 3. A damaged cabbage plant

(i) Identify TWO possible causes of this damage to the cabbage plant.

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(2 marks)

GO ON TO THE NEXT PAGE



(ii) Explain TWO effects this damage would have on the yield of the plant.

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(4 marks)

(c) An extension officer advised Farmer Radica to use a drip irrigation system for her tomato crop.

(i) Advise Farmer Radica of ONE benefit of using the drip irrigation system.

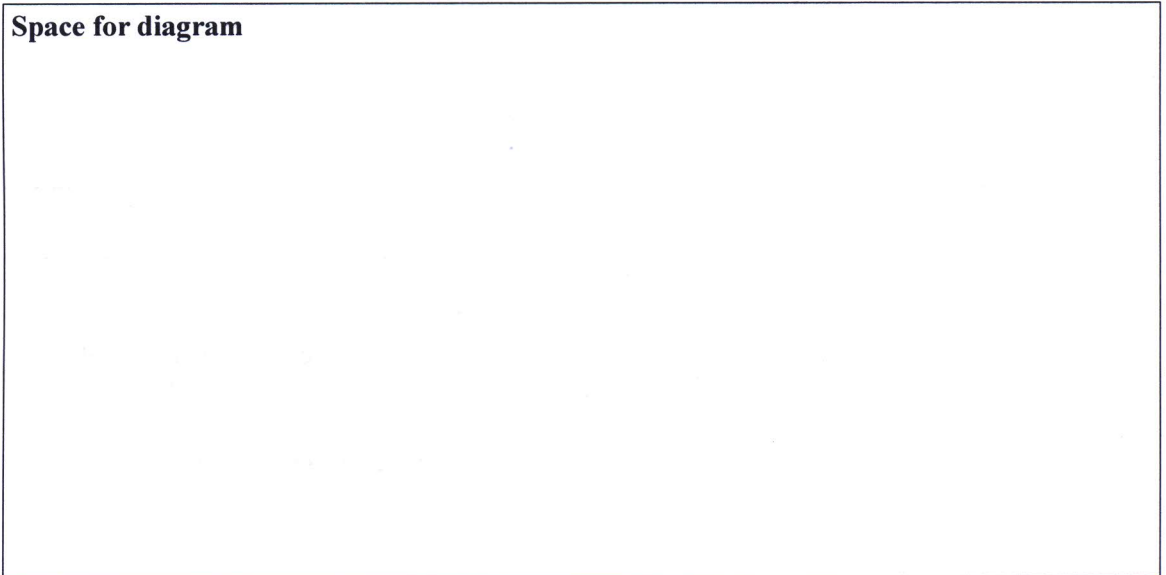
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(1 mark)

(ii) In the box below, sketch and label the drip irrigation system.

Space for diagram



(2 marks)

Total 12 marks

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9. (a) Figure 4 is a diagram of a tool used in beekeeping.

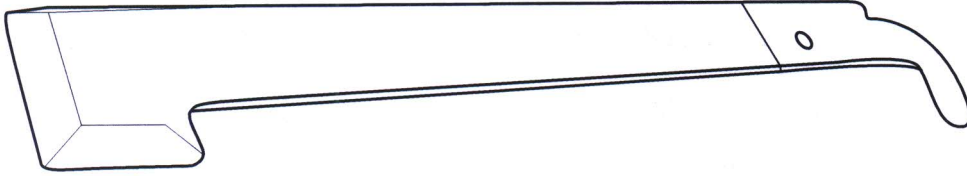


Figure 4. Tool used in beekeeping

Identify the tool shown in Figure 4 and state TWO of its uses in beekeeping.

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(3 marks)

- (b) Beekeeper John has established an apiary in his backyard in the town where he lives. The honey he is harvesting is of poor quality.

- (i) Suggest THREE factors he should have considered in siting his apiary to get honey of a better quality.

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(3 marks)

- (ii) Beekeeper John extracts honey by pressing the honey combs, followed by boiling and straining the honey.

Explain why this method produces honey of poor quality.

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(3 marks)

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(c) Beekeeper John notices that many of his bees are dying of a mite infestation.

Describe TWO ways in which the mite infestation causes the death of the bees, and suggest ONE method that the beekeeper could use to control the mites.

Ways of infestation:

.....

.....

.....

Control:

.....

(3 marks)

Total 12 marks

END OF TEST

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

