CARIBBEAN EXAMINATIONS COUNCIL

CARIBBEAN SECONDARY EDUCATION CERTIFICATE® EXAMINATION

15 MAY 2018 (p.m.)

FILL IN ALL THE INFORMATION REQUESTED CLEARLY IN CAPITAL LETTERS.

TEST CODE | 0 | 1 | 2 | 0 | 3 | 0 | 2 | 0 |

SUBJECT AGRICULTURAL SCIENCE – Paper 02
(Single Award)

PROFICIENCY GENERAL

REGISTRATION NUMBER | | | | | | | | | | |

SCHOOL/CENTRE NUMBER					

NAME OF SCHOOL/CENTRE

CANDIDATE'S FULL NAME (FIRST, MIDDLE, LAST)

DATE OF BIRTH | | | | | | | | |

SIGNATURE _____

FORM TP 2018043

TEST CODE 01203020

MAY/JUNE 2018

CARIBBEAN EXAMINATIONS COUNCIL

CARIBBEAN SECONDARY EDUCATION CERTIFICATE® EXAMINATION

AGRICULTURAL SCIENCE (Single Award)

Paper 02 – 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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SECTION I

Answer ALL questions in this section.

Write your answers in the spaces provided in this booklet.

1. Figure 1 shows a simple aquaponics system.

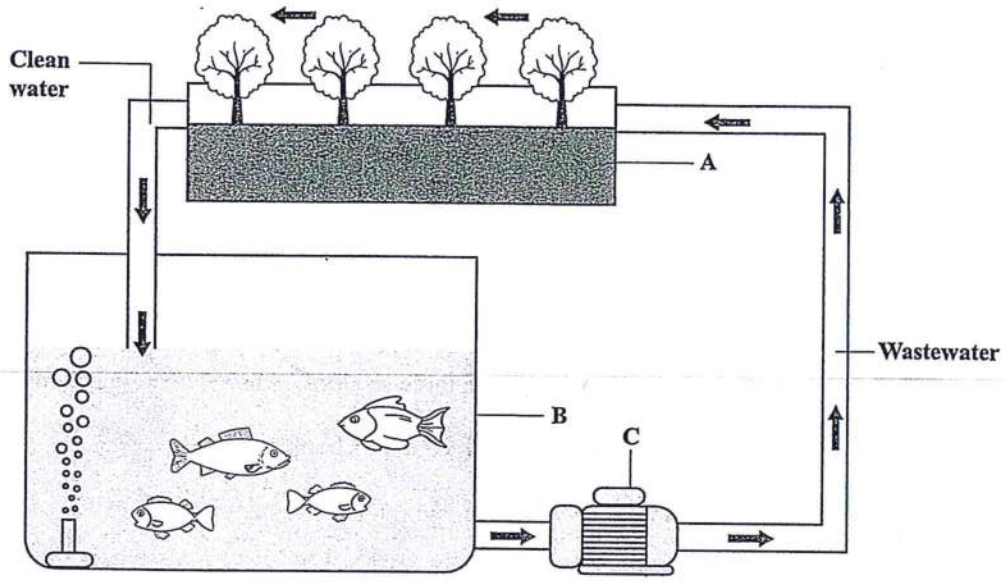


Figure 1. Simple aquaponics system

(a) Identify the main components of the aquaponics system labelled A, B and C.

A .....

B .....

C .....

(3 marks)

(b) Describe TWO ways in which wastewater is converted into clean water in the aquaponics system.

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(2 marks)

(c) Outline TWO benefits of an aquaponics system to the environment.

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(2 marks)

(d) Suggest THREE incentives that the Ministry of Agriculture can provide to encourage the use of aquaponics systems.

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(3 marks)

Total 10 marks

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2. (a) Sally Women's Group produces organic lettuce for sale at a large supermarket. Sales are low and there are two other competitors selling the same product in the supermarket.

(i) What is meant by 'marketing'?

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(1 mark)

(ii) Explain TWO marketing strategies that can be used by Sally Women's Group to increase its sales in the supermarket.

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(4 marks)

(b) Distinguish between 'gross margin' and 'net profit'.

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(2 marks)

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(c) Farmer Lall wants to expand his two-hectare vegetable farm to four hectares. Table 1 shows the budget for both the two-hectare and four-hectare farm.

TABLE 1: BUDGET FOR TWO-HECTARE AND FOUR-HECTARE FARM

Items	Two Hectares ($)	Four Hectares ($)
Sales	10 000	15 000
Total Variable Cost	4 000	10 000
(Gross Margin)	**(6 000)**	**(5 000)**
Total Fixed Cost	2 000	4 000
Net Profit	**4 000**	**1 000**

Based on the information in Table 1, advise Farmer Lall if he should expand his farm to four hectares. Give TWO reasons for your answer.

Decision

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Reasons

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(3 marks)

Total 10 marks

GO ON TO THE NEXT PAGE

SECTION II

Answer ALL questions in this section.

Write your answers in the spaces provided in this booklet.

3. Soil erosion is a major problem in the Caribbean. On a recent field trip to a soil research station, students saw evidence of soil erosion in the fields.

(a) (i) Outline THREE causes of soil erosion.

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(3 marks)

(ii) Suggest ONE effect of soil erosion on crop production.

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(1 mark)

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(b) Farmer Jane cares for her tomato crop by applying adequate fertilizer, water and pesticides. However, the tomato plants are bushy, lying on their side and bearing many small fruits that are resting on the ground.

Outline THREE other cultural practices that are necessary for the tomato plants to produce large and plentiful fruits, and give ONE benefit of EACH practice.

Cultural practice .....

Benefit .....

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(2 marks)

Cultural practice .....

Benefit .....

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(2 marks)

Cultural practice .....

Benefit .....

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(2 marks)
Total 10 marks

GO ON TO THE NEXT PAGE

4. (a) A supermarket chain approaches Farmer Greg to supply it with high quality, slicing cucumbers.

(i) Identify THREE characteristics of cucumbers that would indicate that they are ready for harvesting.

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(3 marks)

(ii) Advise Farmer Greg on TWO postharvest practices that he can implement to maintain the quality of his harvested cucumbers, to ensure that they reach the supermarket in good condition.

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(2 marks)

(b) Kashwar produces seedlings for sale at an agroshop in town. He notices that in some of the plants the stem tissue near the soil surface is water-soaked and weakened, and the seedlings are toppling over.

(i) Identify the disease that may be affecting the seedlings.

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(1 mark)

(ii) Explain TWO ways in which this disease may be managed in Kashwar's plant nursery.

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(4 marks)

Total 10 marks

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SECTION III

Answer ALL questions in this section.

Write your answers in the spaces provided in this booklet.

5. (a) Figure 2 shows the digestive system of a farm animal.

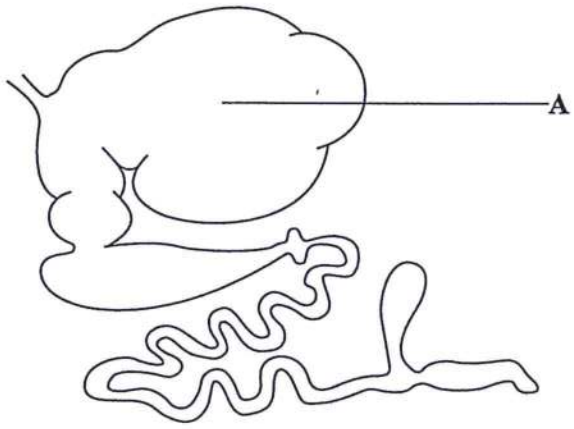


Figure 2. Digestive system of a farm animal

(i) Give ONE example of a farm animal in the tropics whose digestive system is similar to the one shown in Figure 2.

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(1 mark)

(ii) State ONE function of the part labelled A in Figure 2.

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(1 mark)

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(iii) Suggest TWO reasons why the roughage component is limited in the ration of the young animal with the digestive system as shown in Figure 2.

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(2 marks)

(b) Figure 3 shows the digestive system for a broiler bird.

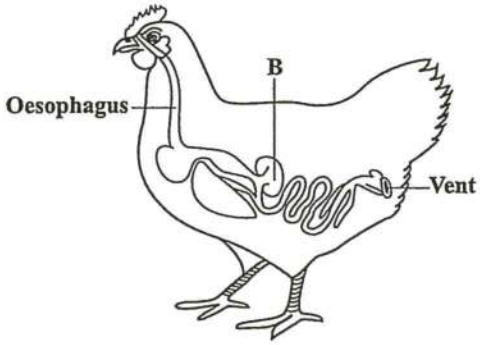


Figure 3. Digestive system of a broiler bird

(i) What is the function of the part labelled B in Figure 3?

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(1 mark)

(ii) A farmer provides grit (small stones) in the diet of layers. How does grit aid in digestion in layers?

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(1 mark)

(iii) A farmer observes cannibalism among his broiler birds and is advised by the extension officer to adjust his management practices.

Explain TWO management practices that the farmer may use to prevent cannibalism among his broiler birds.

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(4 marks

Total 10 mark

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6. Farmer Kushi is rearing tilapia in a pond. An extension officer has concerns about the nutritional status of the fish.

(a) Outline THREE factors that must be considered in siting earthen ponds for tilapia production.

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(3 marks)

(b) Outline TWO observations that may have caused the extension officer to have concerns about the nutritional status of the tilapia and advise Farmer Kushi on THREE factors to consider when providing proper nutrition for the fish.

Observations .....

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Factors to consider .....

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(5 marks)

(c) Fish provides high quality animal protein for human consumption and is a feed supplement for livestock.

Explain TWO ways in which fish can be utilized as supplements for livestock feed.

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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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