FORM TP 2017040

TEST CODE **01202020**

MAY/JUNE 2017

CARIBBEAN EXAMINATIONS COUNCIL

CARIBBEAN SECONDARY EDUCATION CERTIFICATE® EXAMINATION

AGRICULTURAL SCIENCE
(Double Award)

Paper 02 – General Proficiency

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. Write your answers in the spaces provided in this booklet.
4. Do NOT write in the margins.
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.

Write your answers in the spaces provided in this booklet.

1. (a) State TWO career options that university graduates can consider in the area of crop production.

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(2 marks)

(b) A community-based farmers' organization that promotes the development of agriculture in the Caribbean approaches the Caribbean Agricultural Research and Development Institute (CARDI) and the Food and Agriculture Organization (FAO) for assistance in improving the farming practices of its members.

Suggest ONE type of assistance that CARDI and FAO could provide to the farmers' organization.

CARDI

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FAO

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(2 marks)

Total 4 marks

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2. (a) State TWO factors of production, **other than** land, that a farmer should consider when expanding his farm.

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(2 marks)

(b) The CARICOM Single Market and Economy (CSME) seeks to deepen economic integration among Caribbean states.

Suggest TWO benefits of the CSME to the agricultural sector in the Caribbean.

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(2 marks)

Total 4 marks

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3. (a) Figure 1 represents a typical soil profile.

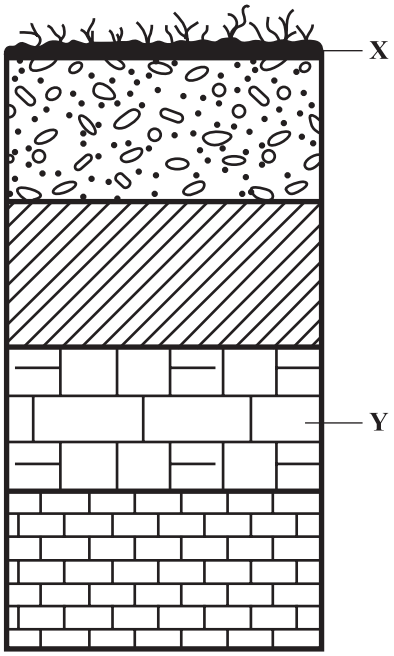


Figure 1. A typical soil profile

State the name of the layers labelled X and Y.

X .....

Y .....

(2 marks)

(b) Mr John is a fruit crop farmer who fertilizes his plants based on their stage of development. He uses a mixed fertilizer labelled 20:10:10 (NPK) for young, non-bearing plants.

Briefly explain the benefits of the fertilizer labelled 20:10:10 (NPK) to the young, non-bearing plants.

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(2 marks)

Total 4 marks

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4. (a) Plant tissue culture is a method of propagation that may be used to propagate banana plants.

Give ONE advantage and ONE disadvantage of plant tissue culture.

Advantage: .....

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Disadvantage: .....

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(2 marks)

(b) Farmer Tim relies heavily on inorganic pesticides to grow vegetables. His crop yields are good but he is concerned about the impact of these chemicals on the environment.

Suggest TWO ways in which farmer Tim could reduce the impact of inorganic pesticides on the environment.

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(2 marks)

Total 4 marks

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5. (a) Figure 2 shows the digestive system in poultry.

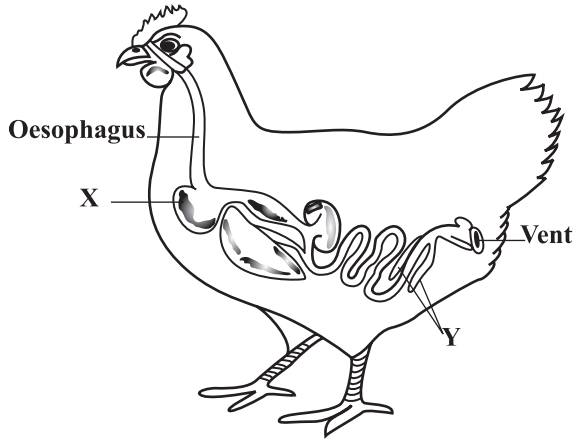


Figure 2. The digestive system in poultry

Identify the parts labelled X and Y in Figure 2.

X .....

Y .....

(2 marks)

(b) A broiler bird weighs 2.5 kg. After slaughter, the offal and feathers weigh 0.5 kg. Calculate the dressing percentage. **(Show all working.)**

(2 marks)

Total 4 marks

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6. (a) Table 1 shows two breeds of livestock reared in the Caribbean.

State the purpose for which EACH breed is reared. Write your answer in Table 1.

TABLE 1: TWO BREEDS OF LIVESTOCK REARED IN THE CARIBBEAN

Breed of Livestock	**Purpose**
Jamaica Hope	....
Barbados Blackbelly	....

(2 marks)

(b) A cattle farmer notices that his healthy cow fails to conceive after several attempts of mating with the same bull.

Suggest TWO methods that he could use to overcome this problem.

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(2 marks)

Total 4 marks

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SECTION II

Answer ALL questions in this section.

Write your answers in the spaces provided in this booklet.

7. (a) List THREE ways in which praedial larceny impacts on the agricultural sector.

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(3 marks)

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(b) A nursery propagates citrus seedlings. The graph in Figure 3 shows the impact of additional workers on output.

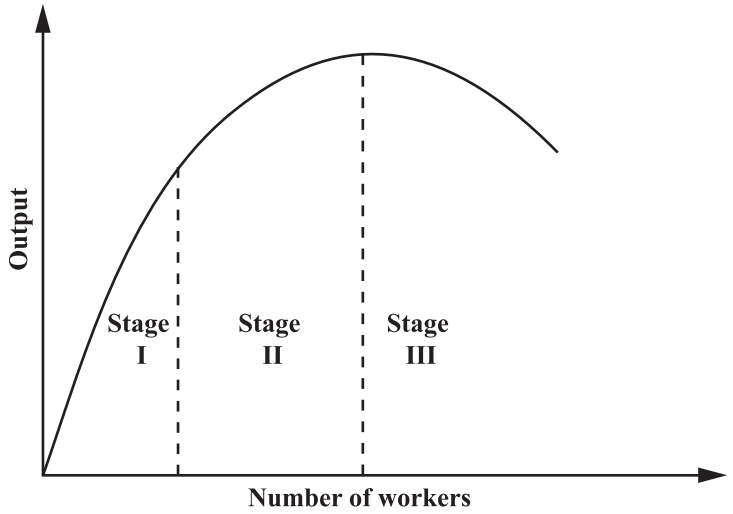


Figure 3. Graph showing impact of additional workers on output

Describe the impact on the production of seedlings of hiring additional workers at Stage II and Stage III.

Stage II .....

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Stage III .....

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(4 marks)

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(c) The nursery operator has recently increased the wages of workers. Given the additional cost, the nursery operator decides to increase the selling price of each plant.

Suggest TWO ways in which farmers may respond to an increase in the price of citrus seedlings.

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(2 marks)

(d) The government is seeking to attract new farmers to the citrus industry. Advise the government on THREE incentives it can provide to increase citrus production.

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(3 marks)

Total 12 marks

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8. Farmer Sampson uses a four-wheel tractor to prepare land for the cultivation of crops on his farm.

(a) Identify THREE pieces of personal protective clothing he should use when operating his tractor.

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(3 marks)

(b) Farmer Sampson sprays his okra crop with an insecticide to control an infestation of flea beetles. After spraying, he becomes ill and is diagnosed with insecticidal poisoning.

Suggest TWO precautions EACH that Farmer Sampson should observe during and after spraying to ensure the safe use of pesticides.

During spraying

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After spraying

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(4 marks)

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(c) A farmer observes that plants in one section of his tomato plot produce high yields of good quality fruits while, in another section, the plants produce low yields and poor quality fruits. An extension officer visits the plot and states that the low yield and poor quality fruits are due to weed infestation.

Explain ONE way by which weeds could reduce the yield and quality of tomato fruits.

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(2 marks)

(d) Describe the features that will indicate when EACH of the following crops are ready for hearvesting.

Tomato .....

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Sweet potato .....

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Cabbage .....

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(3 marks)

Total 12 marks

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9. (a) Farmer Asha receives two different bags of poultry feed with labels showing the constituents of the feeds, as shown in Table 2.

TABLE 2: CONSTITUENTS OF TWO POULTRY FEEDS

Constituent	**Feed A (%)**	**Feed B (%)**
Crude protein	20.0	23.0
Crude fat	2.5	4.0
Crude fibre	5.0	3.0
Minerals	1.3	1.6

Which of the two feeds is BETTER suited for broilers at 1 to 4 weeks of age? Give TWO reasons for your answer.

Feed: .....

Reasons: .....

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(3 marks)

(b) (i) What does the acronym FCR mean?

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(1 mark)

(ii) Write the formula for calculating FCR.

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(1 mark)

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(iii) At Fazir's farm, a broiler bird that ate 9 kg of feed weighed 3 kg.

Calculate the FCR for this bird. **Show all working.**

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(2 marks)

(iv) A researcher conducted a study on the effect of feed on weight gain in broilers. The average FCR for each breed of broiler bird is presented in Table 3.

TABLE 3: FCR FOR BROILERS

Breed of Broiler	**FCR**
Cross Overs	5 : 1
Petersfield	4 : 1
Tobago Brown	3 : 1

Which breed of broiler bird has the best FCR? Give ONE reason for your answer.

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(2 marks)

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(c) Farmer Shakti has a small ruminant farm. During the dry season, she experiences great difficulty sourcing good quality forage for her animals.

Suggest THREE measures she can adopt during the rainy season to ensure that the small ruminants have food, when forage is unavailable.

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(3 marks)

Total 12 marks

END OF TEST

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

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