Cambridge Assessment International Education

Cambridge IGCSE™

CANDIDATE NAME	

CENTRE NUMBER						CANDIDATE NUMBER				

AGRICULTURE **0600/11**

Paper 1 Theory **October/November 2023**

1 hour 45 minutes

You must answer on the question paper.

No additional materials are needed.

INSTRUCTIONS

- Section A: answer **all** questions.
- Section B: answer **two** questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen or correction fluid.
- Do **not** write on any bar codes.
- You may use a calculator.
- You should show all your working and use appropriate units.

INFORMATION

- The total mark for this paper is 100.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **24** pages. Any blank pages are indicated.

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Section A

Answer **all** the questions in the spaces provided.

1 **(a)** **(i)** What type of pest feeds from the vascular tissues of crops?

A biting and chewing

B boring

C predator

D piercing and sucking

Answer **A**, **B**, **C** or **D** ..... [1]

(ii) Describe **three** examples of the damage that biting and chewing pests can cause to crops.

1 .....

.....

2 .....

.....

3 .....

.....

[3]

(b) Locusts are an insect pest that can cause damage to a crop. Birds, such as ducks, that eat locusts are used to control locusts in some countries.

(i) Which type of pest control is this an example of?

A biological

B chemical

C genetic

D rotational

Answer **A**, **B**, **C** or **D** ..... [1]

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(ii) Suggest **three** possible benefits of using ducks to control locusts.

1 .....

.....

2 .....

.....

3 .....

.....

[3]

(iii) Explain **one** possible disadvantage of using ducks to control locusts.

.....

.....

.....

..... [2]

[Total: 10]

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2 The photograph shows a farm animal that has horns.

(a) Alleles **R** and **r** are different versions of a gene. Allele **R** results in an animal having no horns.

(i) Using **R** or **r**, state **one** homozygous genotype.

..... [1]

(ii) State the phenotype of **Rr**.

..... [1]

(iii) What are all the expected offspring genotypes from crosses between two heterozygous parents?

A **RR** and **Rr**

B **RR** and **rr**

C **RR**, **Rr** and **rr**

D **RR** only

Answer **A**, **B**, **C** or **D** ..... [1]

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(b) Suggest **two** disadvantages of an animal having horns compared with the same animal having no horns. Explain each disadvantage.

disadvantage 1 .....

explanation .....

.....

disadvantage 2 .....

explanation .....

.....
[4]

[Total: 7]

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3 **(a)** The table shows part of the records of a farmer keeping animals for meat production.

Complete the table to give **one** different reason why each record is important for the farm business.

record	reason
behaviour	
growth rate	
health	
identification	
reproduction	
selling price	

[6]

(b) Suggest **two** actions a farmer should take if their farm business is **not** making a profit.

1 .....

.....

2 .....

.....

[2]

[Total: 8]

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4 **(a)** Other than insect damage, suggest **three** reasons why crop yields may be low.

1 .....

.....

2 .....

.....

3 .....

.....

[3]

(b) Explain how a systemic pesticide controls insect pests in crops.

.....

.....

.....

.....

.....

.....

.....

..... [4]

[Total: 7]

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5 Some animals are kept in a zero-grazing system.

(a) Describe what is meant by a zero-grazing system.

.....

.....

.....

.....

.....

..... [3]

(b) Other than to increase the carrying capacity, suggest **three** reasons why a farmer may use a zero-grazing system rather than an extensive grazing system.

1 .....

.....

2 .....

.....

3 .....

.....
[3]

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(c) **(i)** Use a labelled diagram to show what is meant by a rotational grazing system.

[3]

(ii) Explain how using rotational grazing can increase the carrying capacity of a grazing system.

.....

.....

.....

..... [2]

[Total: 11]

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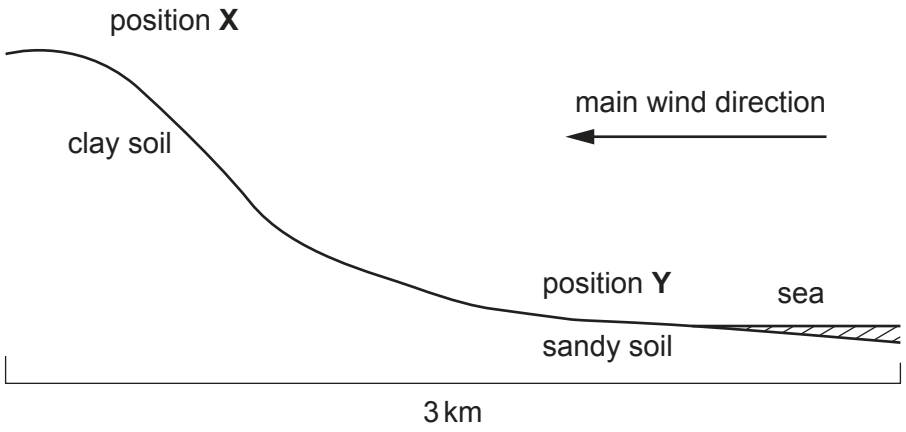
6 The diagram shows a cross-section of a piece of farmland.



(a) For each position, suggest a different method of reducing soil erosion. Describe how each method works.

position **X**

method .....

.....

how method works .....

.....

position **Y**

method .....

.....

how method works .....

.....

[4]

(b) Suggest which position, **X** or **Y**, may be best to grow a crop. Other than soil erosion, suggest **three** reasons for your choice.

position .....

1 .....

.....

2 .....

.....

3 .....

.....

[3]

[Total: 7]

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7 **(a)** Outline how plants use sunlight to make their own food.

.....

.....

.....

.....

.....

.....

.....

..... [5]

(b) The photograph shows plants producing fruit while growing in a controlled environment.

(i) Other than changes to the soil, suggest **two** ways the yield of plants growing in a controlled environment can be increased.

1 .....

.....

2 .....

.....

[2]

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(ii) Explain how the products of photosynthesis are moved to the fruits of the plants.

.....

.....

.....

.....

.....

..... [3]

[Total: 10]

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8 The photograph shows a farmer using an aquaculture system. In this system seaweed is grown on the seashore as a cash crop.

(a) Suggest **three** actions this farmer could carry out to increase the chances of successfully cultivating a seaweed cash crop.

1 .....

.....

2 .....

.....

3 .....

.....

[3]

(b) Suggest **one** possible environmental benefit of cultivating seaweed on the seashore. Suggest **one** possible environmental problem caused by cultivating seaweed on the seashore.

environmental benefit

.....

.....

environmental problem

.....

.....

[2]

[Total: 5]

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9 The table shows information about four forage crops used for animal feed.

forage crop	total growing cost / $ per hectare	dry matter / tonnes per hectare	percentage protein in dry matter	energy / megajoules per kilogram dry matter
A	1452	16	12	12
B	496	9	16	10
C	708	4	17	11
D	305	6	20	10

(a) **(i)** Calculate the total growing cost per tonne of dry matter when growing forage crop **B**.

$ ..... [1]

(ii) Calculate the difference in the mass of protein produced per hectare when growing forage crop **A** compared with forage crop **D**. Include a unit in your answer.

answer .....

unit .....
[2]

(b) Forage crop **A** has the highest total growing cost of the four forage crops shown.

Suggest **two** reasons why a farmer may choose to grow forage crop **A** to use as animal feed even though it has the highest total growing cost.

1 .....

.....

2 .....

.....
[2]

[Total: 5]

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Section B

Answer any **two** questions.

Write the question numbers you have chosen here: .....

10 **(a)** Describe how **two** climatic factors and **one** topographical factor may influence the planning of a farming business. [3]

(b) Suggest factors that a farmer needs to consider when using ditches to drain grazing land. [6]

(c) Other than by drainage, explain how soil can be improved for crop growth. [6]

[Total: 15]

11 **(a)** Describe **two** ways an area of bush may be cleared to grow a crop. Suggest environmental problems that could result from clearance of an area of bush. [5]

(b) Some crops suffer from fungal disease.

(i) State **one** example of a fungal plant disease. Describe its effects on a crop. [4]

(ii) Explain **three** steps a farmer can take to reduce the level of fungal disease in a crop. [6]

[Total: 15]

12 **(a)** Suggest **three** reasons why farmers might choose to use manure in crop production. [3]

(b) Describe how a farmer could test the pH of a sample of soil. Explain how the test results would indicate that liming is required to increase crop growth. [6]

(c) Explain why loam soils are often considered the most suitable soils for crop growth. [6]

[Total: 15]

13 **(a)** Describe how high environmental temperatures can affect crop growth. [4]

(b) Describe how water can be obtained, stored and supplied to growing crops. [6]

(c) Explain why crop plants require different quantities of water at different stages of their growing cycle. [5]

[Total: 15]

14 **(a)** Describe what is meant by each of the following types of ration:
- a maintenance ration
- a production ration.

[4]

(b) Explain how features of good building design can ensure that all animals housed in a building receive an adequate share of food and water. [6]

(c) Other than by good building design, describe how to ensure that a consistent and balanced ration is given to large animals housed indoors. [5]

[Total: 15]

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