Cambridge Assessment International Education

# Cambridge IGCSE™

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| CANDIDATE NAME | | | | | | | | | |
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*0918338169*

**AGRICULTURE** **0600/11**

Paper 1 Theory **October/November 2022**

**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 **28** pages. Any blank pages are indicated.

## Section A

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

**1** **(a)** The diagram shows three systems used for growing sugar cane over a period of two years.

| system 1 | system 2 | system 3 |
|---|---|---|
| sugar cane grown in both years | rows of sugar cane with rows of potatoes grown in between | first year sugar cane with a legume crop grown in the second year |

Suggest **one** reason a farmer might choose each system.

system 1 .....

.....

system 2 .....

.....

system 3 .....

.....

[3]

**(b)** Sugar cane is usually reproduced asexually using stem cuttings.

Describe how to take a stem cutting.

.....

.....

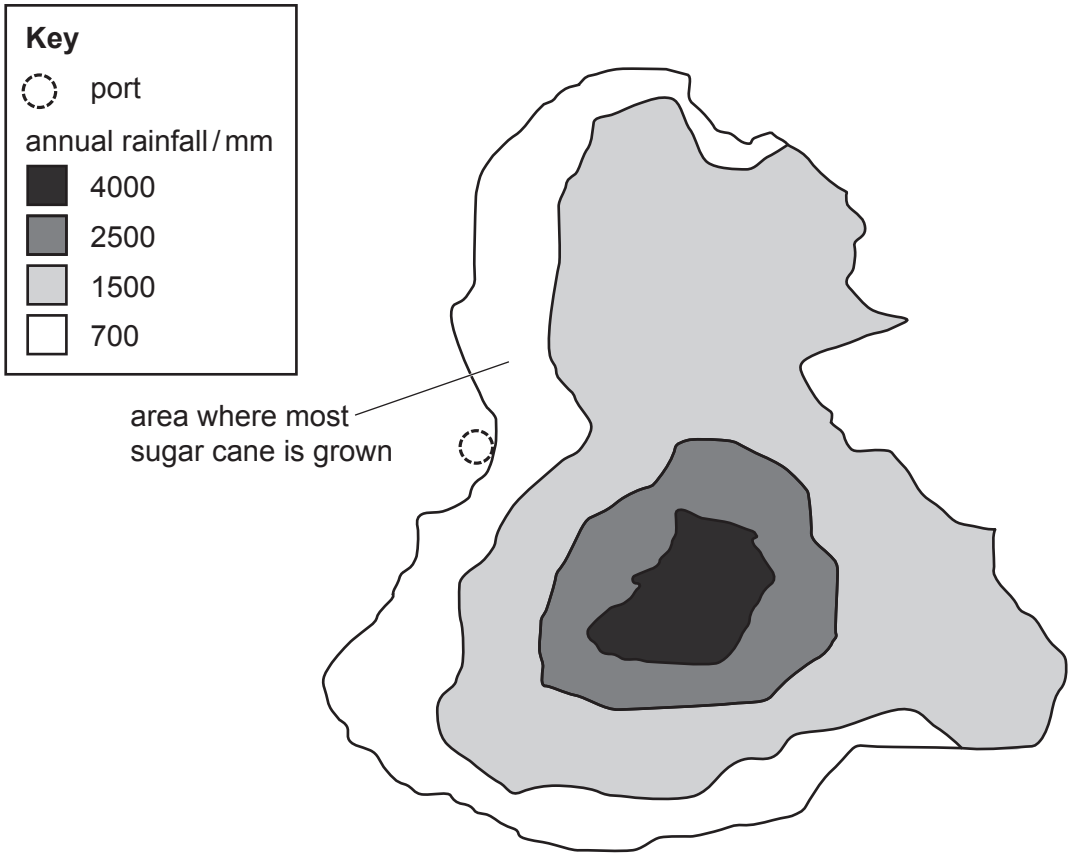
.....

.....

.....

..... [3]

**(c)** The diagram shows mean annual rainfall over an island with a flat coastal area and a mountainous central area.




**(i)** Sugar cane grows best where the annual rainfall is 1500 millimetres. However, most sugar cane is grown where the annual rainfall is 700 millimetres.

Explain **two** reasons why.

1 .....

.....

.....

.....

2 .....

.....

.....

.....

[2]

**(ii)** Suggest how farmers could provide water where rainfall is insufficient.

..... [1]

[Total: 9]

**2** **(a)** The photograph shows an example of soil erosion.

Suggest ways that farmers can reduce soil erosion.

.....

.....

.....

.....

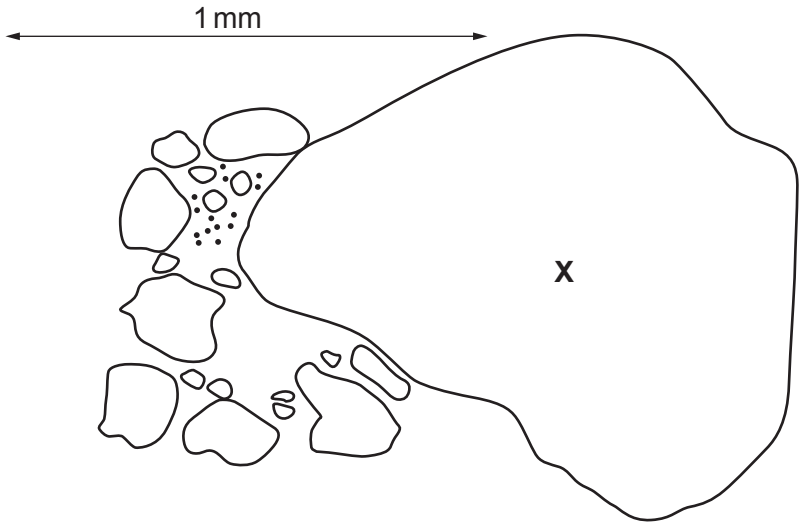
.....

.....

.....

..... [4]

**(b)** The diagram represents a soil crumb. Particle **X** is drawn to scale.




**(i)** The table shows the sizes of some soil particle types.

| soil particle type | particle size / mm |
|---|---|
| clay | <0.002 |
| silt | 0.002–0.05 |
| fine sand | 0.051–0.42 |
| medium sand | 0.43–2.0 |
| coarse sand | 2.1–4.75 |

Use the scale and the table to identify the soil particle type of particle **X**.

Particle **X** is ..... [1]

**(ii)** Identify **two** soil components that are needed for a good crumb structure but are **not** shown in the table.

1 .....

2 .....
[2]



**[Turn over**

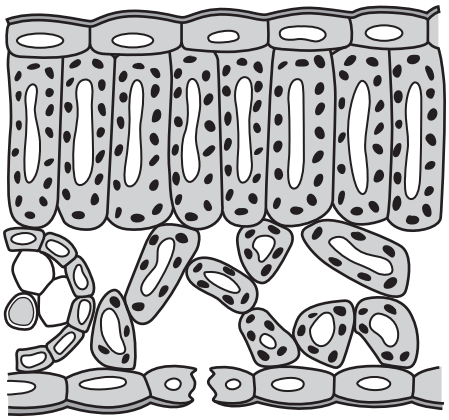
**(c)** The boxes show three descriptions of plants with nutrient deficiencies.

| | | |
|---|---|---|
| purple leaves and small roots | stunted growth with yellow leaves | yellow leaves with dead spots |
| **nitrogen** | **phosphorus** | **potassium** |

Draw **three** lines to link each description with the nutrient the plant is most likely to be deficient in. [2]

[Total: 9]

**3** **(a)** The diagram shows part of a cross-section through a leaf.



**(i)** Explain **three** ways that the structure of a leaf is related to its function.

1 .....

.....

2 .....

.....

3 .....

.....

[3]

**(ii)** State **two** gases released by a leaf.

1 .....

2 .....

[2]

**(b)** Which statement best describes the process of translocation in plants?

**A** movement of a plant from a pot to the field

**B** movement of nutrients absorbed from the soil

**C** movement of synthesised food to the storage organs

**D** movement of water throughout the plant

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

**(c)** High temperatures can reduce seed germination and damage young seedlings.

Suggest ways a farmer could protect seedlings from excessively high temperatures.

.....

.....

.....

..... [2]

**(d)** Which description correctly completes the statement about pollination?

pollen is transferred from:

**A** the stigma of one flower to the anther of another flower

**B** the anther of one flower to the stigma of another flower

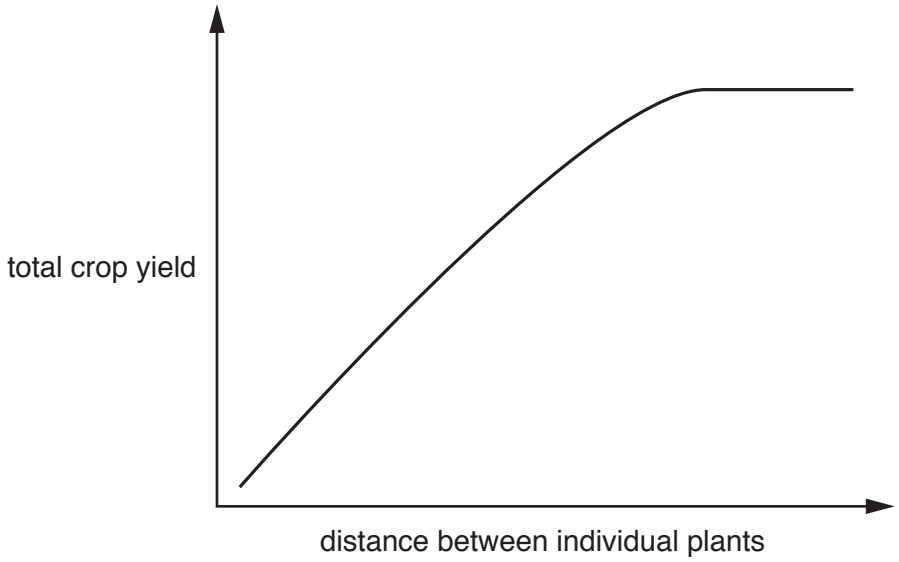
**C** the anther of one flower to the style of another flower

**D** the style of one flower to the stigma of another flower

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

[Total: 9]

**4** **(a)** The graph shows the effect on total crop yield of changing the distance between individual plants.




**(i)** Using the graph, describe how the total crop yield changes as the distance between individual plants increases.

.....

.....

.....

..... [2]

**(ii)** Suggest why growing plants too close together can affect the total crop yield.

.....

.....

.....

..... [2]

**(b) (i)** Weeds can also affect crop yield.

Explain why some weeds cannot be controlled by cultivating the soil.

.....

..... [1]

**(ii)** Suggest why it is important to control weeds before they flower.

.....

..... [1]

**(iii)** Explain why it is important for a farmer to keep records of when crops are sprayed for weed control.

.....

..... [1]

[Total: 7]

**5** **(a)** Describe how each of the following methods can control pests in crops:

crop rotation

.....

.....

.....

ploughing

.....

.....

.....

systemic pesticides.

.....

.....

.....

[3]

**(b)** Describe **three** actions a farmer should take to use pesticides safely.

1 .....

.....

2 .....

.....

3 .....

.....

[3]

**(c)** Which of the following conditions is most likely to encourage fungal diseases?

**A** dry and cool

**B** dry and warm

**C** wet and cool

**D** wet and warm

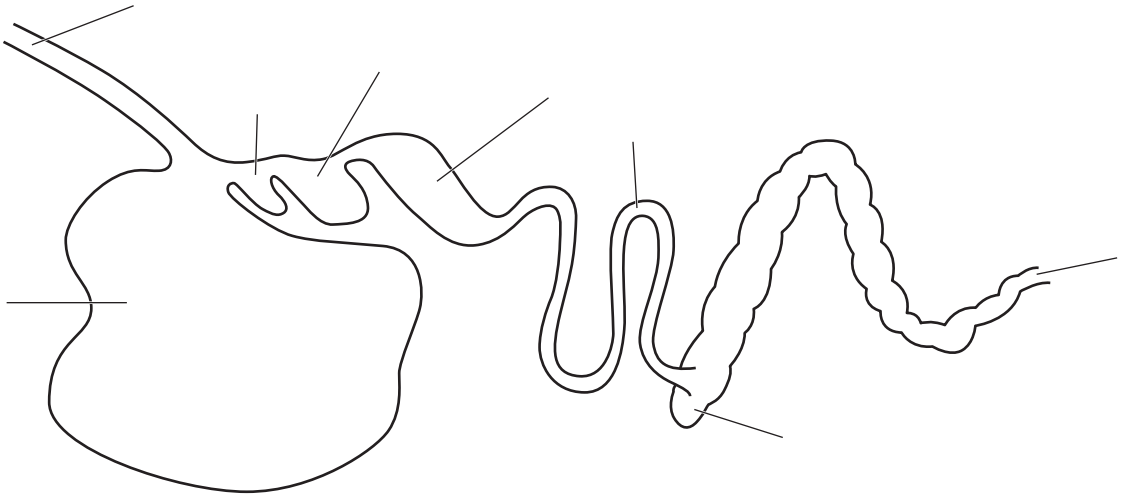
Answer **A**, **B**, **C** or **D** ..... [1]

[Total: 7]

**6** **(a)** The diagram shows part of a ruminant digestive system.

Place each of the following words next to a label line to correctly label the diagram.
Each word should only be used once.

**abomasum** **omasum** **reticulum** **rumen**



[4]

**(b)** Explain how enzymes help digestion.

.....

.....

.....

..... [2]

**(c)** State the part of the digestive system where the main function is water absorption.

..... [1]

[Total: 7]

**7** **(a)** Some calves are reared on milk prepared from powder, rather than milk from their mothers.

The table shows the volumes of milk prepared from powder that were fed to two groups of bucket-reared calves.

| calf age / days | group **A** milk prepared from powder / litres | | group **B** milk prepared from powder / litres | |
|---|---|---|---|---|
| | morning feed | afternoon feed | morning feed | afternoon feed |
| 0–4 | colostrum | colostrum | colostrum | colostrum |
| 5 | 1.00 | 1.00 | 1.00 | 1.00 |
| 6 | 1.25 | 1.25 | 1.25 | 1.00 |
| 7 | 1.50 | 1.50 | 1.50 | 1.00 |
| 8 | 1.75 | 1.75 | 1.75 | 1.00 |
| 9 | 1.75 | 1.75 | 2.25 | 0.75 |
| 10–25 | 2.00 | 2.00 | 3.00 | |
| 26–39 | 1.75 | 1.75 | 3.00 | |
| 40 | 1.50 | 1.50 | 2.50 | |
| 41 | 1.00 | 1.00 | 1.50 | |
| 42 | 0.50 | 0.50 | 0.50 | |

**(i)** State the age at which group **B** first received only one feed per day.

age ..... [1]

**(ii)** State the age at which group **B** first received less milk prepared from powder than group **A**.

age ..... [1]

**(iii)** Calculate how much less milk prepared from powder is fed to group **B** than is fed to group **A** between days 40 and 42.

..... litres [1]

**(b)** The calves were all given colostrum for the first four days of their lives.

Explain why this is important.

.....

.....

.....

.....

.....

..... [3]

[Total: 6]

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**8** **(a)** The photograph shows two cows. One cow has horns and one cow has no horns.

Suggest **one** advantage and **one** disadvantage of rearing cattle that have horns.

advantage .....

.....

disadvantage .....

.....

[2]

**(b)** Assume that genetics control whether cattle have horns or have no horns and that this is determined by a single gene. The allele for having no horns, **H**, is dominant.

**(i)** Two cattle with the genotype **Hh** were crossed.

Identify the expected ratio of offspring from this cross with horns to those with no horns.

**A** 1:0

**B** 1:2

**C** 0:1

**D** 1:3

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

**(ii)** Over many years a bull was mated with a cow born with no horns.

Approximately half of the offspring had no horns.

Use a genetic diagram to identify the genotype of the bull. Justify your answer.

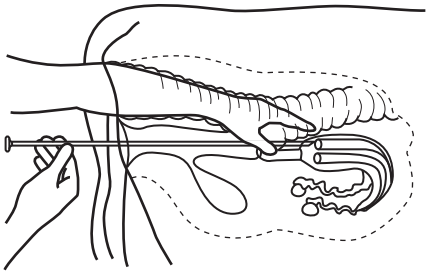
.....

.....

.....

.....
[2]

**(c)** The diagram shows one process that can be used in animal breeding.



**(i)** State the name that is given to this process.

..... [1]

**(ii)** Suggest **three** reasons this process is used.

1 .....

.....

2 .....

.....

3 .....

.....
[3]

[Total: 9]

**9** **(a)** The photograph shows an example of unsuitable livestock housing.

Suggest why unsuitable livestock housing like this can have negative effects on animal health and welfare.

.....

.....

.....

..... [2]

**(b)** A farmer needs to construct a fence around a field.

The field is a rectangle measuring 25 metres by 20 metres.

**(i)** Determine how many fence posts the farmer will need if spacing the fence posts 5 metres apart.

..... fence posts [1]

**(ii)** Calculate the minimum total length of wire that would be needed if the farmer used 4 strands of wire to make the fence.

..... m [1]

**(c)** Suggest a different reason why each of the following are important when constructing a fence:

**(i)** treating the fence posts

.....

..... [1]

**(ii)** making sure the wire is correctly tightened

.....

..... [1]

**(iii)** making the fence the correct height.

.....

..... [1]

[Total: 7]

## Section B

Answer any **two** questions.

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

**10** **(a)** Suggest reasons why less land is available for agriculture worldwide. [4]

**(b)** Outline how agricultural output has been able to increase even though less land is available. [6]

**(c)** Explain how increasing agricultural output has caused damage to the environment. [5]

[Total: 15]

**11** **(a)** A farmer has an area of rough grazing land.

Describe how this land can be converted to improved pasture. [7]

**(b)** Explain why improving a pasture increases its carrying capacity. [4]

**(c)** Suggest how fences can improve the utilisation of pasture. [4]

[Total: 15]

**12** **(a)** Using examples, discuss what factors need to be considered when choosing the materials for building an animal house. [7]

**(b)** Explain why providing a source of clean water is essential for livestock. [4]

**(c)** Describe how dirty water could be treated to make it safe for livestock to drink. [4]

[Total: 15]

**13** **(a)** Suggest the factors a farmer should consider when choosing what crop to grow. [5]

**(b)** For a named crop, describe how to prepare the soil and how the crop should be sown or planted. [6]

**(c)** Suggest why incorrect storage of crops after harvesting can lead to reduced profits. [4]

[Total: 15]

**14** **(a)** Explain the link between diet and health in livestock. [4]

**(b)** Using examples, explain why careful record keeping can help to reduce ill-health in livestock. [6]

**(c)** Suggest how records, other than health records, can be used to improve the profitability of keeping livestock. [5]

[Total: 15]

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