Cambridge Assessment International Education

Cambridge IGCSE™

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

AGRICULTURE **0600/11**

Paper 1 Theory **October/November 2024**

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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[Turn over

Section A

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

1 The statements, **A** to **D**, describe features of different farming practices.

A growing a crop in water instead of soil

B growing fish in ponds

C growing a crop using no chemicals to control pests

D growing trees on a hill

(a) Identify the statement which links best to:

(i) hydroponics Answer **A**, **B**, **C** or **D** ..... [1]

(ii) forestry Answer **A**, **B**, **C** or **D** ..... [1]

(iii) aquaculture. Answer **A**, **B**, **C** or **D** ..... [1]

(b) (i) Some farms grow genetically modified (GM) crops.

Describe **two** potential advantages of growing GM crops.

1 .....

.....

2 .....

.....

[2]

(ii) Explain **two** ways that growing GM crops could reduce farm profits.

1 .....

.....

.....

.....

2 .....

.....

.....

.....

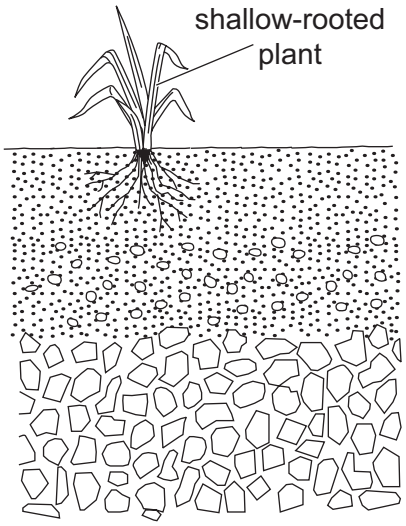
[4]

[Total: 9]

2 The diagram shows a shallow-rooted plant growing in a sandy soil profile.

(a) Label the following layers of the soil profile on the diagram.

subsoil **topsoil**



[2]

(b) Explain **two** reasons why a shallow-rooted plant might **not** grow well in a sandy soil.

1 .....

.....

.....

.....

2 .....

.....

.....

.....

[4]

(c) Suggest **two** ways that a farmer could increase the yield of a shallow-rooted crop growing in a sandy soil.

1 .....

.....

2 .....

.....

[2]

[Total: 8]

3 **(a)** To provide suitable environmental conditions farmers often choose to grow plants indoors, as shown in the photograph.

(i) Suggest how the plants growing inside the building can be provided with the following:

a suitable temperature .....

.....

sufficient water. .....

.....

[2]

(ii) Suggest how **two** other named environmental conditions could be controlled inside this building.

1 .....

.....

2 .....

.....

[2]

(b) Describe how each of the following climatic conditions affect the growth rate of a plant:

cold .....

.....

dry. .....

.....

[2]

(c) Farmers may use different methods to control pests within farm buildings. The table shows information about different pest control treatments in a building.

	biological pest control		chemical pest control	
	average number of pests on plant		average number of pests on plant	
	before treatment	after treatment	before treatment	after treatment
aphid	155	78	150	7
leaf miner	54	50	49	7

(i) Calculate the percentage of leaf miner remaining after chemical pest control.

..... % [1]

(ii) The table suggests that chemical pest control is better at removing pests than biological pest control.

Suggest **two** reasons why some farmers still prefer to use biological pest control.

1 .....

.....

2 .....

.....

[2]

[Total: 9]

4 **(a)** The nitrogen cycle has many processes.

(i) Draw **three** lines to correctly match each description to a nitrogen cycle process.

description	**nitrogen cycle process**
nitrites are converted into nitrates	decomposition
nitrogen from the air is processed by bacteria	denitrification
soil nitrates are converted into nitrogen gas	nitrification
	nitrogen fixation

[3]

(ii) State the nitrogen cycle process from **(a)(i)** that is carried out in legumes.

..... [1]

(b) Other than their role in the nitrogen cycle, describe **two** ways that legume crops may help maintain soils.

1 .....

.....

2 .....

.....

[2]

[Total: 6]

5 Some plants reproduce using sexual reproduction.

(a) Describe **two** features of sexual reproduction.

1 .....

.....

2 .....

.....

[2]

(b) **(i)** State what is meant by pollination.

.....

.....

.....

..... [2]

(ii) The photograph shows a flower being pollinated by an insect.

State **two** features of an insect-pollinated flower. Explain how each feature helps increase pollination by insects.

feature 1 .....

explanation .....

.....

feature 2 .....

explanation .....

.....

[4]

(c) Suggest why it is important to ensure pollination in crop plants.

.....

..... [1]

[Total: 9]

6 **(a)** State **two** differences between a ruminant digestive system and a non-ruminant digestive system.

1 .....

.....

2 .....

.....

[2]

(b) Describe a main function of each of the following:

large intestine .....

.....

oesophagus .....

.....

small intestine .....

.....

liver. .....

.....

[4]

[Total: 6]

7 A ration is the food provided to a farm animal by a farmer.

(a) State what is meant by:

a maintenance ration .....

.....

a production ration. .....

.....

[2]

(b) **(i)** Other than controlling parasites, suggest **two** actions a farmer could take to reduce the spread of infectious disease.

1 .....

.....

2 .....

.....

[2]

(ii) Explain **one** way that livestock parasites could affect a farming business.

.....

.....

.....

..... [2]

[Total: 6]

8 **(a)** State what is meant by the carrying capacity of a grazing system.

.....

..... [1]

(b) A farmer keeps cattle in an extensive grazing system.

Suggest why the following tasks are important in this extensive grazing system:

bush control .....

.....

monitoring stocking rate .....

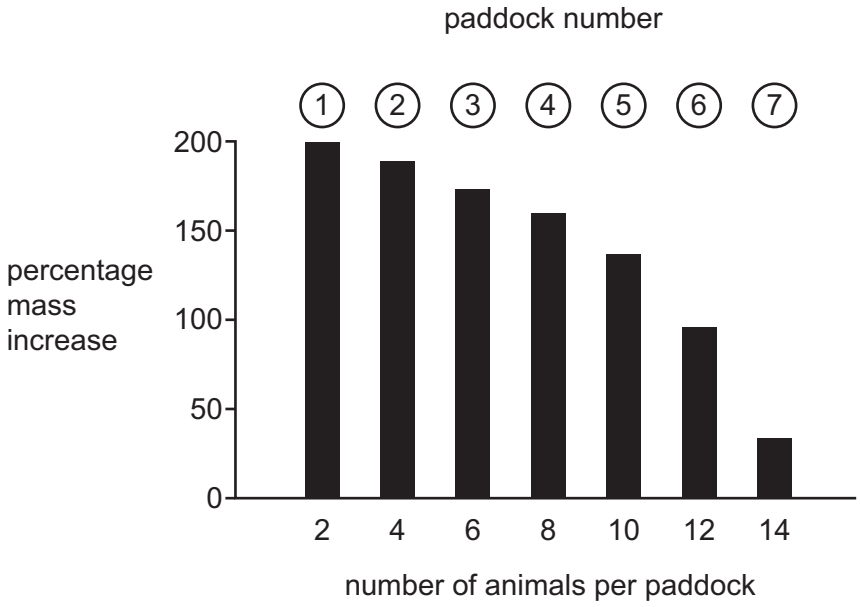
.....

controlled use of fire. .....

.....

[3]

(c) The graph shows the results of an investigation about the mass increase of young animals kept in seven separate paddocks of the same size for the same length of time.



(i) Describe the trend shown by the graph.

.....

..... [1]

(ii) Suggest **two** reasons for the trend shown by the graph.

1 .....

.....

2 .....

.....

[2]

(iii) Other than paddock size and time kept in paddock, suggest **two** variables that should be controlled to make this a fair investigation.

1 .....

.....

2 .....

.....

[2]

[Total: 9]

9 Assume the resistance to drought of a cereal crop is controlled by a single gene and the allele for this resistance, **D**, is dominant.

(a) Suggest **two** possible genotypes that would be resistant to drought.

1 .....

2 .....
[2]

(b) Two heterozygous cereal plants are crossed. Draw a genetic diagram to show the expected ratio of offspring cereal plants with drought resistance to those without drought resistance.

[3]

(c) Some cereal crop varieties have shorter stems than others.

(i) Suggest **two** reasons why a farmer might want to grow cereal plants with shorter stems.

1 .....

.....

2 .....

.....
[2]

(ii) Other than by genetic modification, suggest **one** way to produce a cereal crop variety with shorter stems.

.....

..... [1]

[Total: 8]

Section B

Answer any **two** questions.

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

10 **(a)** Describe how soil is prepared for the cultivation of a crop. [4]

(b) Identify **one** mechanised tool and **one** hand tool used to prepare soil for cultivation. Describe additional maintenance required for these tools when used on each of the following:

- stony ground
- wet soils. [5]

(c) A farmer is considering selling their ox and replacing it with a tractor.

Suggest what the farmer needs to consider before making this decision. [6]

[Total: 15]

11 **(a)** State the name of **one** boring crop pest. Describe its effects on a crop. [4]

(b) Describe how organic methods can be used to control pests. [5]

(c) Suggest **three** ways that applying farm chemicals incorrectly could damage the environment. Explain how this damage could be avoided by using these chemicals correctly. [6]

[Total: 15]

12 **(a)** State what is meant by phenotype. Describe the phenotypes expected in an animal raised for meat production. [4]

(b) Describe how selective breeding can improve the quality of farm livestock. [5]

(c) When breeding cattle, explain **three** disadvantages of using artificial insemination compared with using natural breeding. [6]

[Total: 15]

13 **(a)** Outline the process of photosynthesis. [4]

(b) Discuss, using examples, how different processes are used to move materials through a plant. [6]

(c) Suggest the problems caused by the overuse of fertilisers. [5]

[Total: 15]

14 **(a)** Describe **two** ways large volumes of water can be stored on a farm. [4]

(b) Not all water used on a mixed farm needs to be of the same quality.

Discuss, using examples, how a mixed farm can use different sources of water for different purposes. [6]

(c) Describe **two** animal-health problems that can result from a contaminated supply of water. Explain how water can be treated to avoid these problems. [5]

[Total: 15]

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