Cambridge Assessment International Education

Cambridge O Level

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

AGRICULTURE **5038/12**

Paper 1 Theory **October/November 2025**

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.

[Turn over

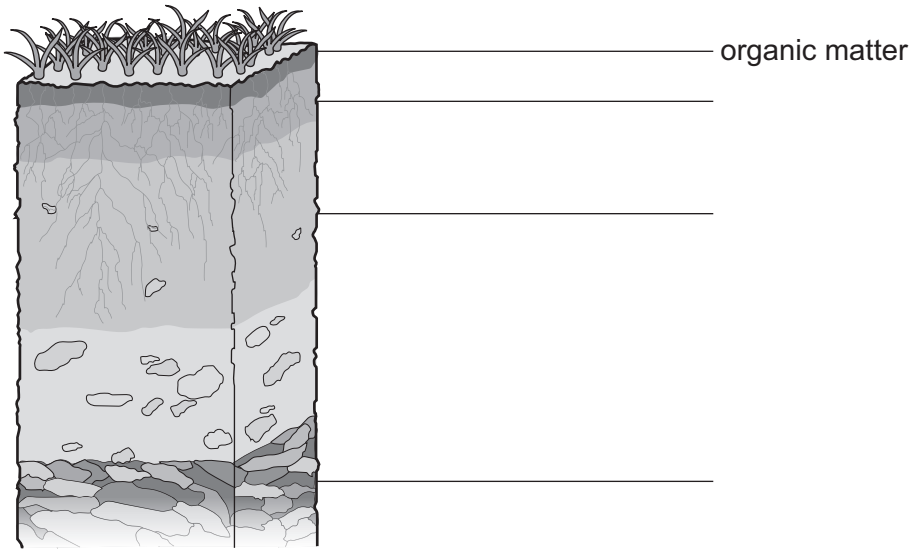
Section A

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

1 **(a)** The diagram shows a soil profile.

(i) Write each of the following words next to the correct label line.

topsoil **subsoil** **underlying materials**



[2]

(ii) Suggest **two** ways in which organic matter is important for growing crops.

1 .....

2 .....

[2]

(iii) Describe **two** ways that a farmer could increase or maintain the organic matter shown in the diagram.

1 .....

.....

2 .....

.....

[2]

(b) The table shows the average number of earthworms found in a sample taken at different soil depths.

soil depth / centimetres	number of earthworms
0 to 30	165
31 to 80	20
more than 80	0

Suggest **two** reasons why the number of soil organisms decreases with increasing soil depth.

1 .....

.....

2 .....

.....

[2]

(c) A farm has two soil types, one is sandy and the other is clay.

Compare these two soil types in terms of water-holding capacity, nutrient content and rate of drainage.

.....

.....

.....

.....

.....

..... [3]

[Total: 11]

2 **(a)** **(i)** The table shows part of a three-crop rotation for three fields.

Complete year 3 in the table.

	year 1	year 2	year 3
field 1	bean	maize	
field 2	maize	sweet potato	
field 3	sweet potato	bean	

[1]

(ii) Explain **two** benefits of using crop rotation.

1 .....

.....

.....

.....

2 .....

.....

.....

.....

[4]

(b) Some farmers may introduce livestock within a rotation.

Suggest **two** benefits of this.

1 .....

.....

2 .....

.....

[2]

[Total: 7]

3 **(a)** Water is essential for growing plants.

(i) State the process by which water leaves a plant.

..... [1]

(ii) Describe **two** ways in which a plant uses water.

1 .....

.....

2 .....

.....

[2]

(b) **(i)** Describe the process of osmosis.

.....

.....

.....

..... [2]

(ii) Suggest what happens to the amount of water in a plant's root if a farmer adds too much fertiliser.

.....

..... [1]

[Total: 6]

4 The photograph shows a building used for storing cereal crops.

(a) (i) Suggest **two** environmental conditions that are needed to store cereal crops successfully.

1 .....

2 .....

[2]

(ii) A farmer decides to replace the thatch roof with a metal roof.

Describe **three** possible advantages of replacing a thatch roof with a metal roof.

1 .....

.....

2 .....

.....

3 .....

.....

[3]

(b) (i) A farmer decides to apply an insecticide to the building before harvest.

Suggest **one** reason the farmer may wish to do this.

.....

..... [1]

(ii) The table shows the internal surface area of parts of a different storage building. The application rate of insecticide is 1.5 litres of diluted insecticide for every 20 square metres of surface area.

	internal surface area / square metres
walls	24
floor	9
roof	14

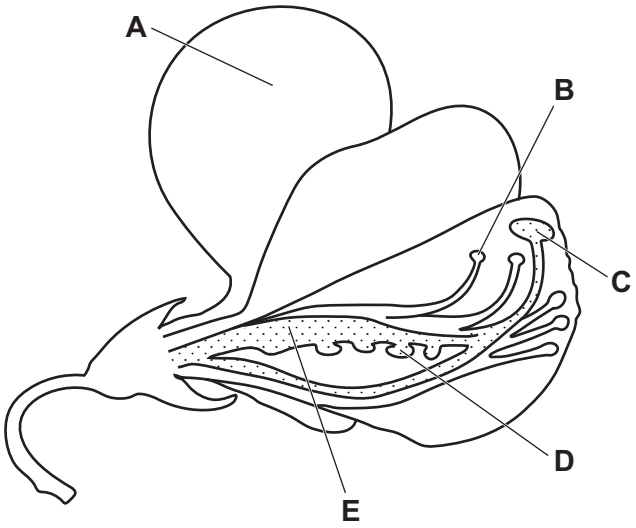
Calculate how many litres of diluted insecticide the farmer would use for the whole internal surface area of the storage building.

Give your answer to two decimal places.

..... litres [2]

[Total: 8]

5 The diagram shows a bean flower cut in half.



(a) Describe how structures **A**, **B** and **C** help pollination to take place.

A .....

.....

B .....

.....

C .....

.....

[3]

(b) State the names of the following flower parts:

D .....

E. .....

[2]

[Total: 5]

6 **(a)** **(i)** Describe the role of different parts of a non-ruminant digestive system.

.....

.....

.....

.....

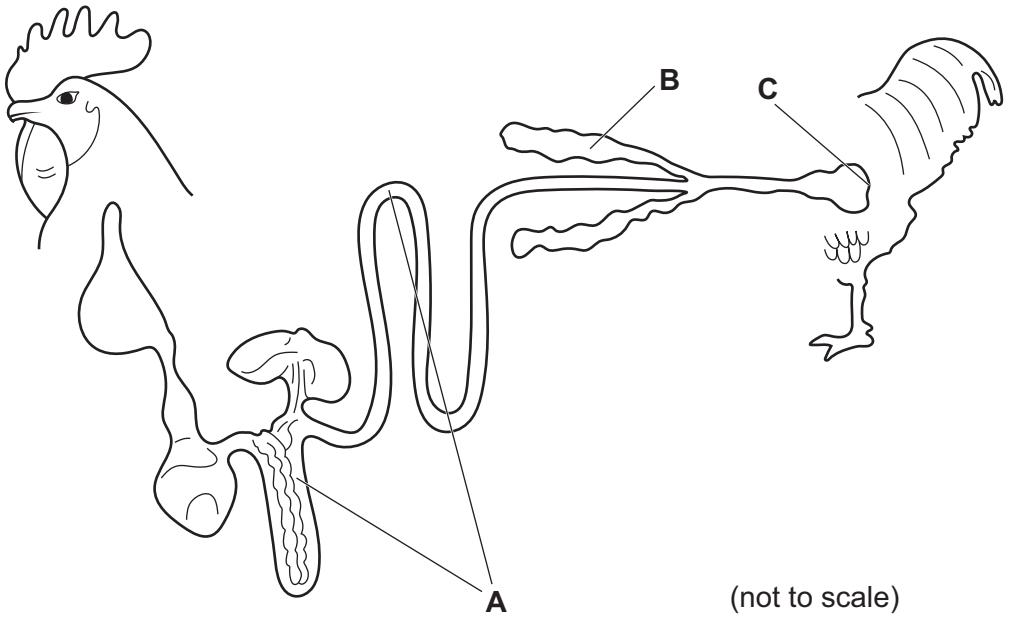
.....

.....

.....

..... [4]

(ii) The diagram shows part of the digestive system of a chicken, which is a non-ruminant.



(not to scale)

Use the following words to identify **A**, **B** and **C**.

caecum **small intestine** **rectum**

A .....

B .....

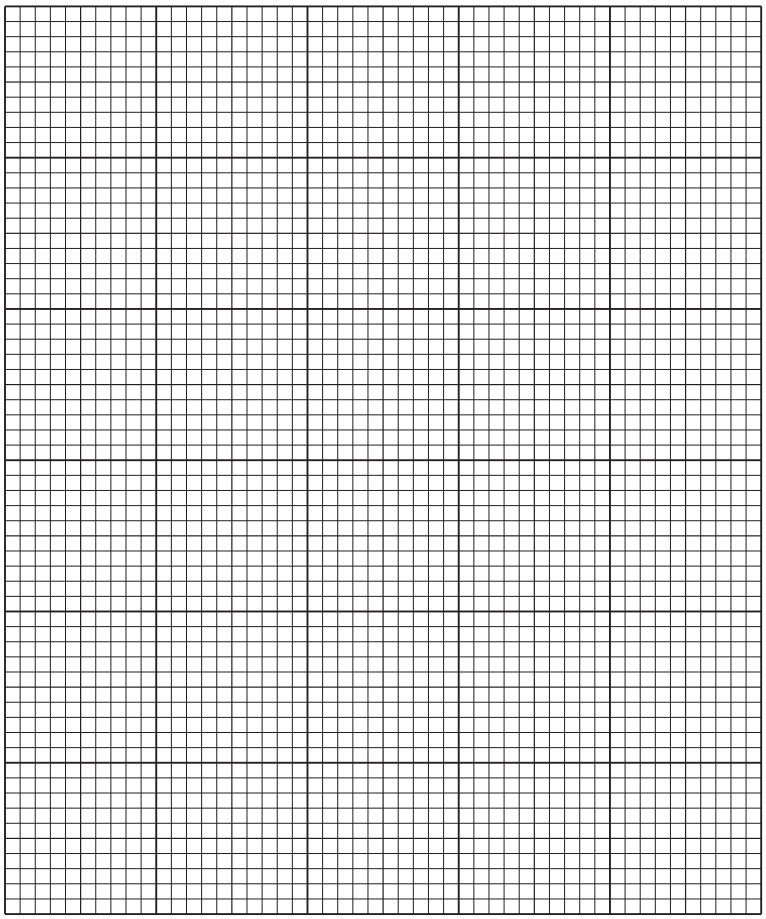
C .....

[2]

(b) The table shows the average number of eggs produced annually by chickens in a barn.

season	average number of eggs produced
spring	38
summer	89
autumn	84
winter	29

(i) Using the data in the table, draw a bar chart to show the average number of eggs produced in each season.



[3]

(ii) Suggest why egg production is lowest in the winter.

.....

..... [1]

(iii) The chickens in the barn were fed with a production ration. This resulted in a 10% increase in egg production.

Suggest the main nutrient content of this production ration.

..... [1]

(iv) Use the table to calculate the expected number of eggs produced annually with this 10% increase.

..... eggs [1]

(v) Even without providing a production ration, egg production can be increased by providing a field for chickens.

Suggest **two** possible reasons for this increased egg production.

1 .....

.....

2 .....

.....

[2]

[Total: 14]

7 **(a)** The table shows the daily water requirement for some farm animals.

farm animal	daily water requirement / litres
sheep	5–18
bull	22–68
dairy cow	49–91

(i) Suggest **two** reasons why there is a range of values for an animal's daily water requirement.

1 .....

.....

2 .....

.....

[2]

(ii) Suggest **two** reasons why the daily water requirement for a dairy cow is often higher than the daily water requirement for a bull.

1 .....

.....

2 .....

.....

[2]

(b) Outline the importance of providing a clean water supply to farm animals.

.....

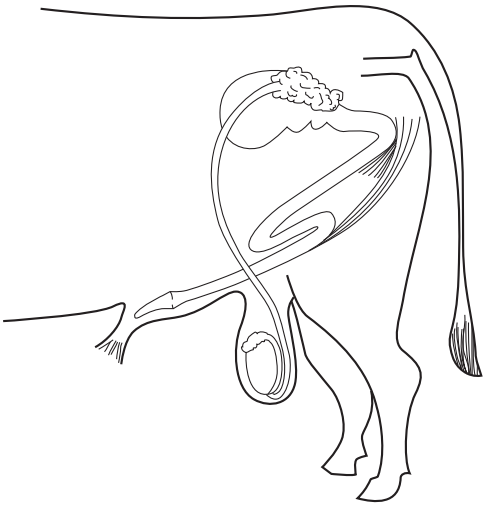
..... [1]

[Total: 5]

8 **(a)** The diagram shows the reproductive system of a bull.

Label the following structures on the diagram using label lines.

scrotum **epididymis** **penis**



(not to scale)

[3]

(b) Suggest **two** disadvantages of using artificial insemination rather than allowing animals to mate naturally.

1 .....

.....

2 .....

.....

[2]

(c) Other than by artificial insemination, suggest **two** ways that a farmer could control the spread of sexually transmitted diseases in a dairy herd.

1 .....

.....

2 .....

.....

[2]

[Total: 7]

9 **(a)** **(i)** Describe what is meant by phenotype.

.....

..... [1]

(ii) Explain the importance of the phenotype in selective breeding programmes.

.....

.....

.....

..... [2]

(b) Chickens with the genotype **gg** have a slow growth rate. Assume growth rate is determined by a single gene.

Using a diagram, show the expected ratio of offspring chickens with a normal growth rate to offspring chickens with a slow growth rate when chickens which are heterozygous for this gene are crossed.

[3]

(c) Other than profit, suggest **one** benefit for a farmer of keeping chickens with a faster growth rate.

.....

..... [1]

[Total: 7]

Section B

Answer any **two** questions.

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

10 **(a)** Describe the method of construction for a fence suitable for large livestock. [5]

(b) Discuss how the use of fencing to control livestock may improve productivity. [4]

(c) Other than the use of fencing, describe methods that a farmer could use to increase the productivity of pasture. [6]

[Total: 15]

11 **(a)** State the name of a local weed. Describe the harmful effects weeds have on a farm. [6]

(b) Explain **one** way that weeds can be controlled by each of the following methods:

- cultural
- mechanical
- chemical.

[6]

(c) Describe how to determine which method of weed control is most effective. [3]

[Total: 15]

12 **(a)** Describe what is meant by asexual reproduction in plants. [3]

(b) Suggest the disadvantages of using stem cuttings to reproduce plants. [5]

(c) Discuss why a farmer should keep records when producing crops. [7]

[Total: 15]

13 **(a)** Describe what is meant by weaning. [2]

(b) Describe how the sperm meets the egg in a named mammalian farm animal. [6]

(c) Suggest how the quality of meat produced in a livestock production system could be improved by selective breeding. [7]

[Total: 15]

14 **(a)** Describe what is meant by hydroponics. [3]

(b) Explain **three** ways in which the use of agricultural land may be limited by topographical, climatic or environmental factors. [6]

(c) Suggest the environmental benefits of a farmer changing to organic farming. [6]

[Total: 15]

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