Cambridge
O Level

Cambridge International Examinations
Cambridge Ordinary Level

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

AGRICULTURE **5038/12**

Paper 1 **October/November 2015**

1 hour 45 minutes

Candidates answer Section A on the Question Paper.

Additional Materials: Answer Booklet/Paper

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
You may use an HB pencil for any diagrams or graphs.
Do not use staples, paper clips, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Section A
Answer **all** questions.
Electronic calculators may be used.
Write your answers in the spaces provided on the Question Paper.
You are advised to spend no longer than 1 hour on Section A.

Section B
Answer any **two** questions.
Write your answers on the Answer Booklet/Paper provided.
Enter the numbers of the Section B questions you have answered in the grid.

At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.

For Examiner's Use	
Section A	
1	
2	
3	
4	
5	
6	
7	
8	
9	
Section B	
Total	

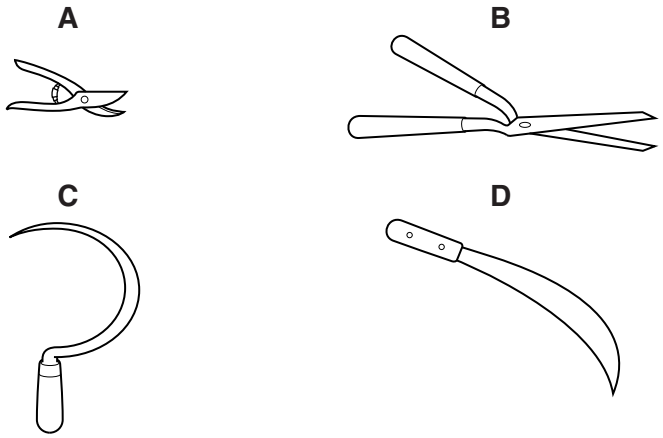
This document consists of **19** printed pages and **1** blank page.

CAMBRIDGE International Examinations

Section A

Answer **all** the questions.

1 **(a)** Which tool is best for clearing thick, woody undergrowth (bush)?



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

(b) Fig. 1.1 shows two types of farm implement.

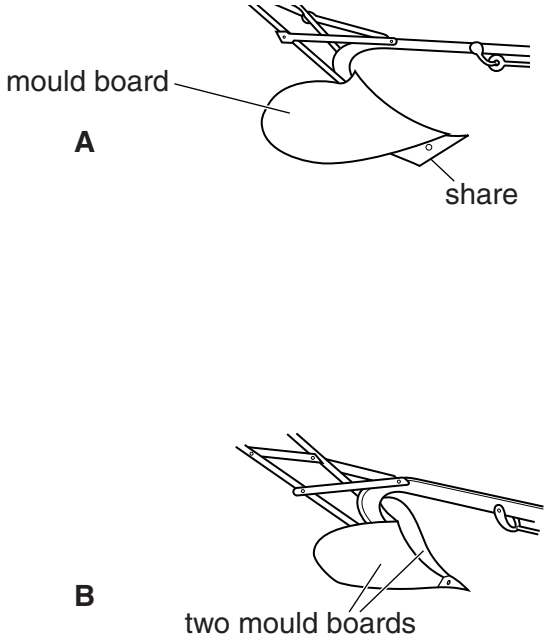


Fig. 1.1

(i) What is the difference between the two implements?

.....

..... [1]

(ii) State the uses for the two implements.

Implement **A** .....

Implement **B** ..... [2]

(iii) How should these implements be cared for after use?

.....

.....

..... [2]

[Total: 6]

2 Fig. 2.1 shows a waterlogged field.

Fig. 2.1

(a) Describe **two** ways this land could be reclaimed for agricultural use.

1 .....

.....

2 .....

..... [2]

(b) Once reclaimed, the low-lying land would still be likely to flood.

Circle the farming activity you consider to be the most suitable to carry out on this land.

aquaculture (fish farming) **cereal production**

forestry **livestock grazing**

(i) Give **two** reasons for your choice.

1 .....

.....

2 .....

..... [2]

(ii) Why you did **not** select the other options?

I did not choose ..... because .....

.....

.....

.....

I did not choose ..... because .....

.....

.....

.....

I did not choose ..... because .....

.....

..... [3]

[Total: 7]

3 **(a)** Fig. 3.1 shows a germinating maize seed.

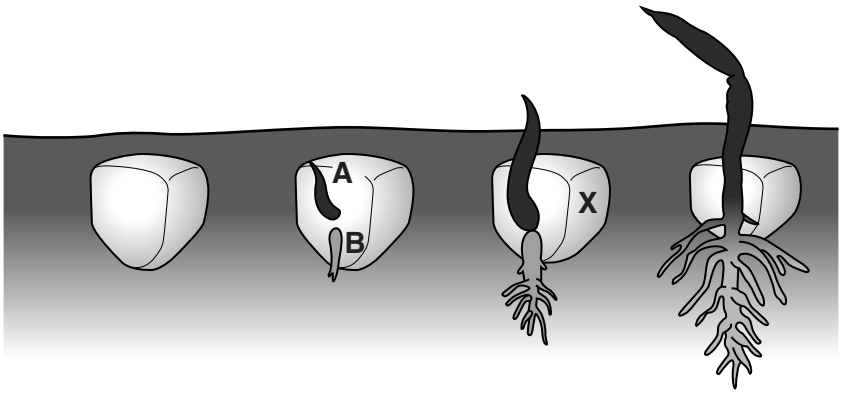


Fig. 3.1

(i) Name the parts marked **A** and **B** in Fig. 3.1.

A .....

B ..... [2]

(ii) State a function for the part labelled **X**.

..... [1]

(b) Name a crop of local importance that is grown from seed.

.....

Outline how this seed should be sown.

.....

.....

.....

.....

..... [3]

(c) **(i)** What is meant by the term *cultivar*?

..... [1]

(ii) Why is it not recommended to grow seeds collected from F_1 hybrid cultivars?

.....

..... [1]

[Total: 8]

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4 **(a)** Rocks can be weathered in different ways.

What causes **chemical** weathering?

A carbon dioxide dissolved in rainwater

B water trapped in cracks in rocks freezing and thawing

C rocks expanding and contracting with changes in temperature

D particles of sand being blown against rocks

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

(b) Rocks can be broken down by biological weathering.

(i) State **one** way that plants cause biological weathering.

..... [1]

(ii) State **one** way that animals cause biological weathering.

..... [1]

(c) Plants can aid the formation of soil once the rocks are broken down by weathering.

Fig. 4.1 shows a legume plant.

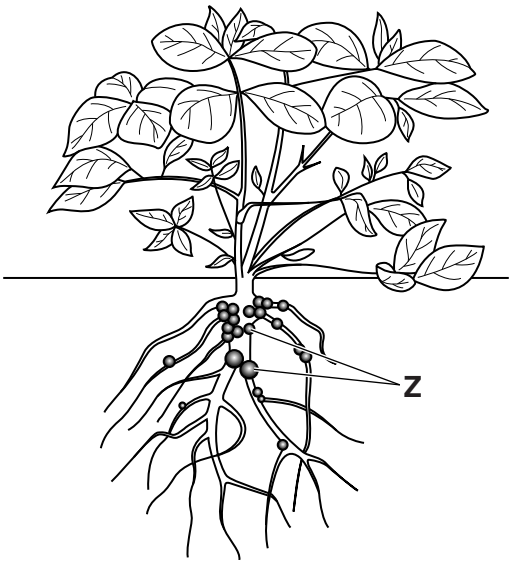


Fig. 4.1

(i) What name is given to the structures labelled **Z**?

..... [1]

(ii) Explain how legumes help improve soils.

.....

.....

..... [2]

(d) What is meant by the term *fertile* soil?

.....

.....

.....

..... [2]

[Total: 8]

5 **(a)** Fig. 5.1 shows organic and inorganic fertilisers.

organic fertiliser

inorganic fertiliser

Fig. 5.1

Underline the statement that is true for organic fertilisers **only**.

They improve the soil structure.

They cause pollution.

Their nutrients are dissolved in the soil water.

They improve the growth of crops. [1]

(b) Table 5.1 shows some information about four different fertilisers.

Table 5.1

fertiliser	type	%N	%P	%K	trace elements	rate of nutrient release
chicken manure	organic	6.0	5.0	3.0	present	slow
kraal/farm manure	organic	4.0	0.3	0.5	present	slow
Agrigrow	inorganic	7.0	7.0	7.0	absent	quick
SuperFert fertiliser	inorganic	15.0	30.0	15.0	absent	quick

(i) State **two** differences in the chemical composition of organic and inorganic fertilisers shown by this data.

1 .....

.....

2 .....

..... [2]

(ii) What percentage (%) of potassium is available in kraal/farm manure?

..... [1]

(iii) SuperFert fertiliser, shown in Fig. 5.1, is also listed in Table 5.1.

What do the figures 1:2:1 on the bag refer to?

.....

..... [1]

(c) Suggest **two** harmful effects of applying too much inorganic fertiliser to the soil.

1 .....

.....

2 .....

..... [2]

[Total: 7]

6 (a) (i) Healthy animals need a balanced diet.

This includes minerals.

Iron is an essential mineral.

What condition results from a lack of iron?

A anaemia

B poor bone growth

C poor eyesight

D scurvy

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

(ii) Mothers' milk provides the young with a balanced diet.

What is the period called when a mother produces milk for her offspring?

A fertilisation

B gestation

C lactation

D weaning

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

(iii) Mothers' milk also provides colostrum.

Why is colostrum important for new born ruminants?

A it helps develop the rumen

B it helps prevent disease

C it helps to start cudding

D it helps stimulate sucking

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

(b) Fig. 6.1 shows an animal feeding on three different types of food.

Fig. 6.1

These foods can be described by their contents.
Draw lines to match each of the three types of food with their contents.

type of food	content
concentrate	high in fibre
roughage	high in moisture
succulent	high in nutrients

[2]

(c) Older animals are fed compound rations.
Different parts of plants are used for making up compound rations.

(i) Explain why animals needing a maintenance ration are fed a high proportion of tubers, e.g. potatoes or cassava.

.....

..... [1]

(ii) Explain why animals needing a production ration are fed a high proportion of grain (seeds), e.g. maize or millet.

.....

..... [1]

(d) Describe briefly the way ruminants and non-ruminants use fibre in their diet.

.....

.....

..... [2]

[Total: 9]

7 Table 7.1 shows details of diseases caused by bacteria, fungi and viruses.

Table 7.1

name of disease	mode of infection	cause of disease
wilt	.....	bacterium
.....	water or air	fungus
.....	insect vector	virus

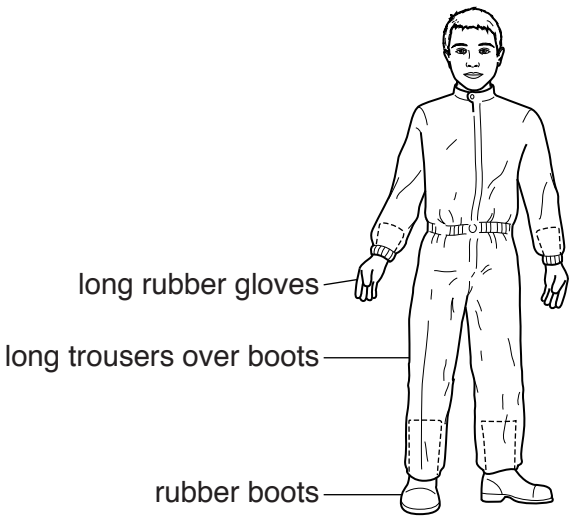
(a) Complete the missing details in Table 7.1. [3]

(b) Name an insect vector and explain how it spreads infection.

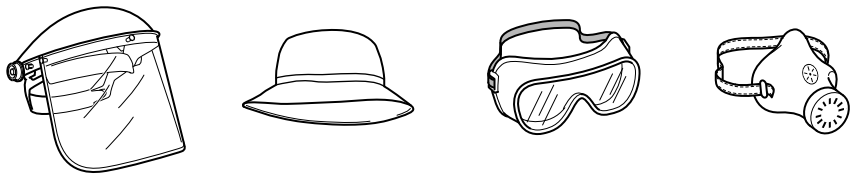
.....

..... [2]

(c) **(i)** The diagram shows the protective clothes worn when using chemicals.



What else should be worn when mixing very toxic fluids?



face shield waterproof hat goggles respirator

A face shield and respirator

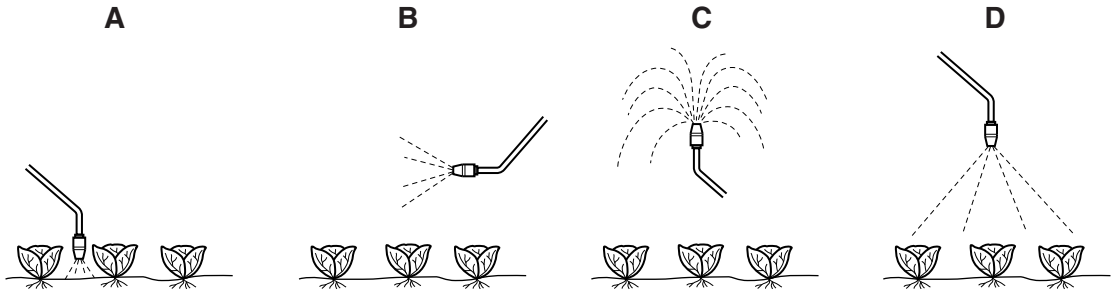
B face shield and waterproof hat

C goggles and respirator

D goggles and waterproof hat

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

(ii) Which diagram shows how the nozzle of a sprayer should be held when spraying crops?



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

(d) State **two** methods of cultural disease control.

1 .....

.....

2 .....

..... [2]

[Total: 9]

8 **(a)** Where is sperm made in the male animal?

A penis

B prostate gland

C testes

D urethra

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

(b) Fig. 8.1 shows the reproductive system of a sow (female pig).

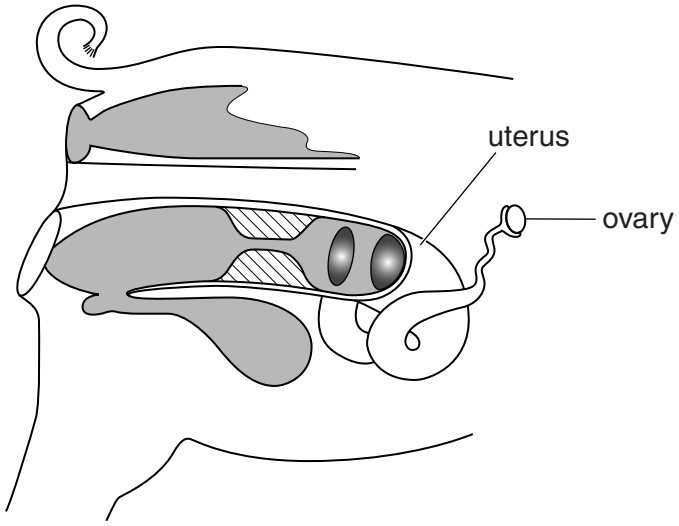
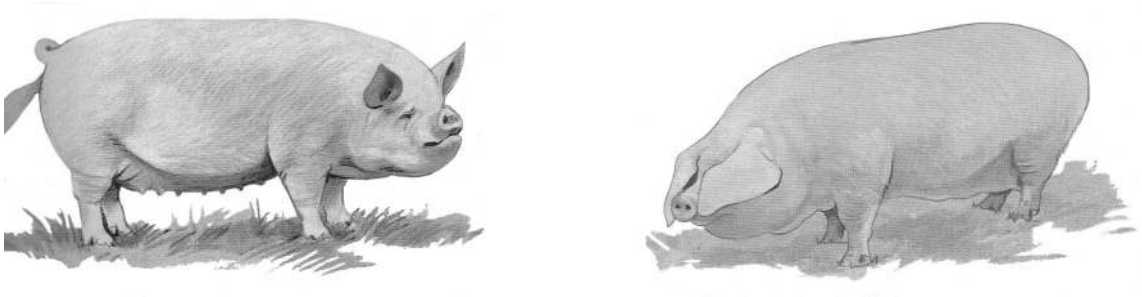


Fig. 8.1

Place an **X** on Fig. 8.1 where fertilisation is most likely to occur. [1]

(c) Fig. 8.2 shows two pigs, one with prick ears and the other with lop ears.



prick ears lop ears

Fig. 8.2

The shape of ears is controlled by a pair of alleles.

The allele for lop ears is dominant over the allele for prick ears.

(i) Choose an appropriate letter to represent each of these alleles.

lop ear allele ..... prick ear allele ..... [1]

(ii) Using these letters, give the genotype of the offspring produced by mating a homozygous (pure breeding) lop-eared pig with a prick-eared pig.

Show your working.

Answer ..... [2]

(d) (i) Suggest how a pig breeder could obtain a herd of pigs with prick ears only.

.....

..... [1]

(ii) Explain why it would take much longer for a pig breeder to obtain a homozygous (pure breeding) herd of pigs with lop ears.

.....

..... [1]

[Total: 7]

9 **(a)** Small farm animals can be kept in livestock buildings.
The roof, wall, window and floor parts of these buildings can be constructed of materials that provide a controlled environment for the animals.

Choose **two** parts of a livestock building and explain how they can be constructed to control the environment.

part chosen .....

explanation .....

.....

part chosen .....

explanation .....

..... [2]

(b) Fig. 9.1 shows chickens kept in cages.

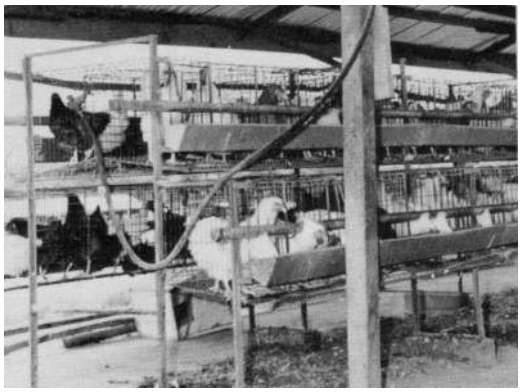


Fig. 9.1

(i) State **two** possible risks to the health of chickens from keeping them in cages.

1 .....

2 ..... [2]

(ii) Animals kept in cages can be provided with food all the time.
This is known as 'ad lib' feeding.

Suggest a reason why 'ad lib' feeding is not recommended for caged animals.

.....

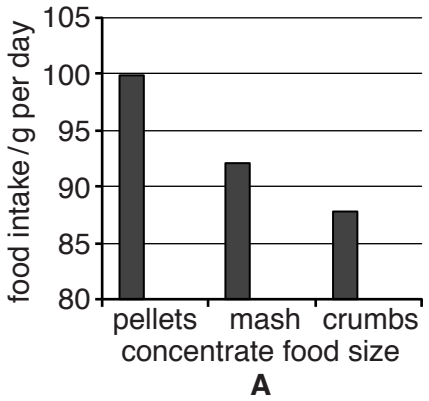
..... [1]

(c) Table 9.1 shows the effect of feeding laying hens in cages with concentrate food of same nutrient value but in different forms.

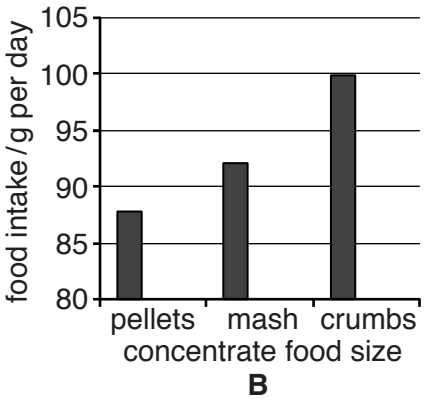
Table 9.1

concentrate food size	feed intake /g per day	daily egg production /number of eggs	egg mass /g per egg	feed cost /$ per 100 eggs
mash	87.8	0.92	59.3	3.03
crumbs	92.1	0.93	58.6	2.99
pellets	99.1	0.84	53.3	3.53

(i) Which bar chart correctly represents the daily food intake? **A**, **B**, **C** or **D** ..... [1]



A



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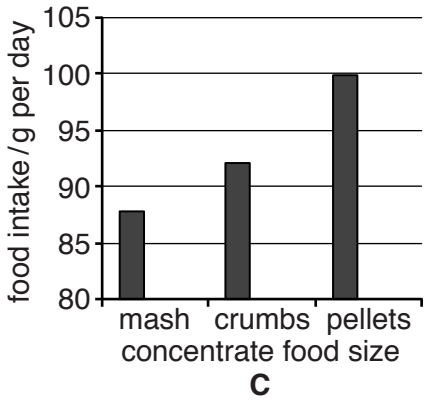

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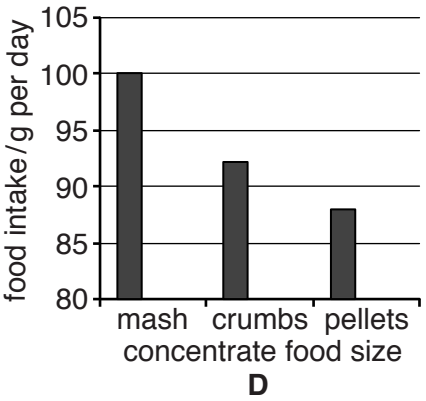

D

(ii) Use the data from the table to explain why the cost of eggs from mash-fed hens is less than eggs produced from pellet-fed hens.

.....

.....

..... [2]

(iii) A farmer who fed crumbs was worried that his business would be less successful than his neighbour who fed mash.
Was he right to be worried? Give a reason for your answer.

..... [1]

[Total: 9]

Section B

Answer any **two** questions.

Write your answers on the separate paper provided.

10 **(a)** Describe the construction, including materials used and main features, of a fence to enclose large farm animals**.** [10]

(b) Explain why the materials you described were used to build the fence. [5]

11 **(a)** Describe the harmful effects of weeds on crops. [6]

(b) Explain how weeds in crops are controlled by mechanical and chemical methods. [6]

(c) Suggest how the most cost effective method of weed control is determined. [3]

12 **(a)** Use a labelled diagram to describe the structure of the alimentary canal of a **named** non-ruminant (not poultry). [9]

(b) Explain the role of microorganisms and enzymes in the process of digestion in a ruminant. [6]

13 **(a)** **(i)** What is meant by the *transpiration stream*? [5]

(ii) Explain how water is lost from a leaf. [7]

(b) Suggest benefits of the transpiration stream to plants. [3]

14 **(a)** Describe how to find the pH of a pasture soil.
Include details of how samples are taken and how to carry out a laboratory test. [9]

(b) Explain how adding lime to a soil can affect its fertility. [6]