

Centre Number	Candidate Number	Name
---------------	------------------	------

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

AGRICULTURE

5038/01

Paper 1

October/November 2004

2 hours

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 a soft pencil for any diagrams, graphs or rough working.
Do not use staples, paper clips, highlighters, glue or correction fluid.

Section A

Answer **all** questions.
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 **three** questions.
Write your answers on the separate Answer Booklet/Paper provided.

At the end of the examination, fasten all your work securely together.
Enter the numbers of the Section B questions you have answered in the grid below.

The number of marks is given in brackets [] at the end of each question or part question.

	For Examiner's Use
Section A	
Section B	/
Total	

If you have been given a label, look at the details. If any details are incorrect or missing, please fill in your correct details in the space given at the top of this page.

Stick your personal label here, if provided.

Section A

Answer **all** the questions.

- 1 (a) Fig. 1.1 shows *intercropping*. A legume, such as groundnuts, is being grown between rows of a cereal, such as maize.

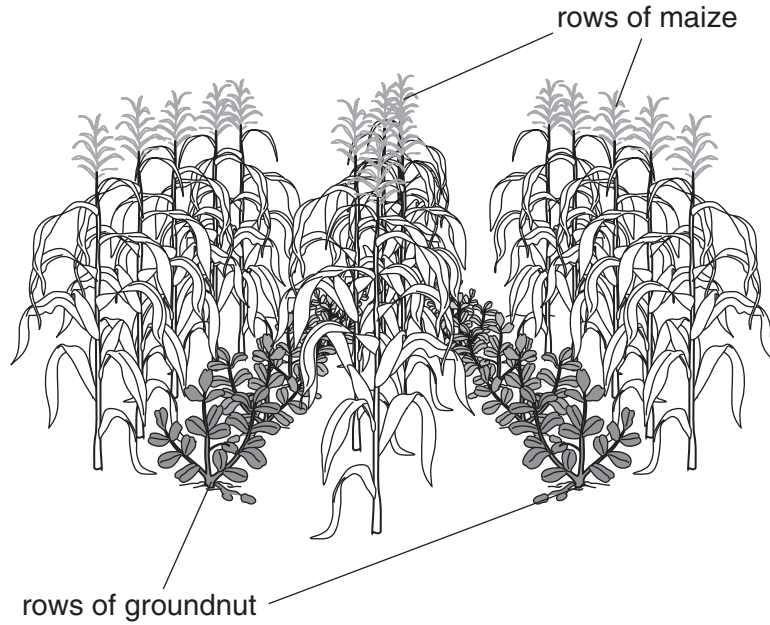


Fig. 1.1

Suggest **one** advantage and **one** disadvantage of intercropping.

advantage

.....

disadvantage

.....[2]

(b) Fig. 1.2 shows a cross-section through a terraced hillside, used for growing crops

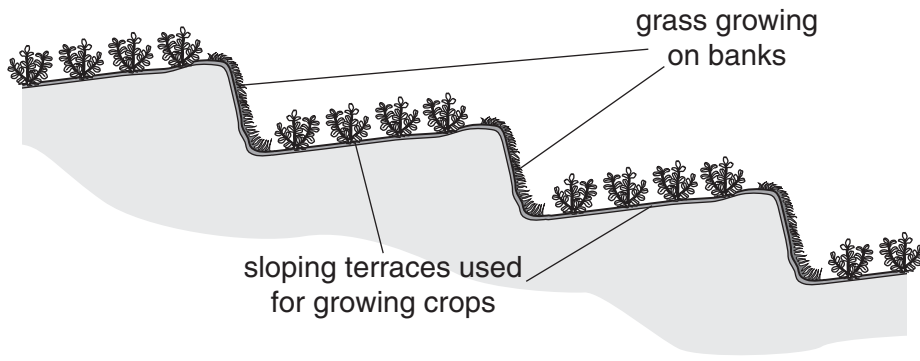


Fig. 1.2

(i) Explain why the terraces are sloping.

.....
.....
.....[2]

(ii) Why is grass grown on the banks?

.....
.....
.....[2]

[Total: 6]

- 2 Fig. 2.1 shows part of a label from an agricultural herbicide container.

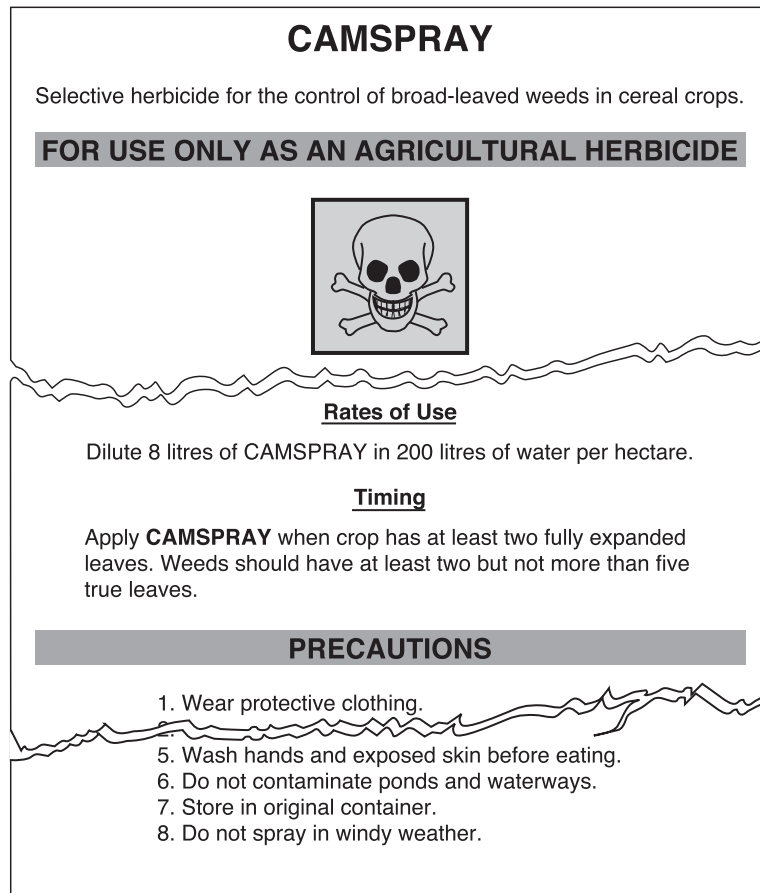


Fig. 2.1

- (a) Ten litres of water are put into a knapsack sprayer. How much herbicide should be mixed into this to make the correct dilution? Show your working.

Quantity of herbicide needed litres

[2]

- (b) (i) The label states that protective clothing should be worn when spraying. The diagram shows a person about to begin spraying the herbicide.

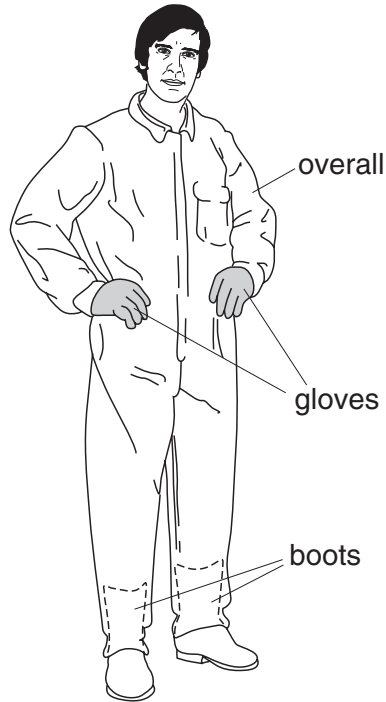


Fig. 2.2

Which other **essential** item of protective clothing should the person put on?

.....[1]

- (ii) Explain why the herbicide should be stored in its original container.

.....

.....

.....[2]

- (iii) Explain why spraying in windy weather should be avoided.

.....

.....

.....[2]

(c) Fig. 2.3 shows fruit trees growing alongside a maize crop in a field.

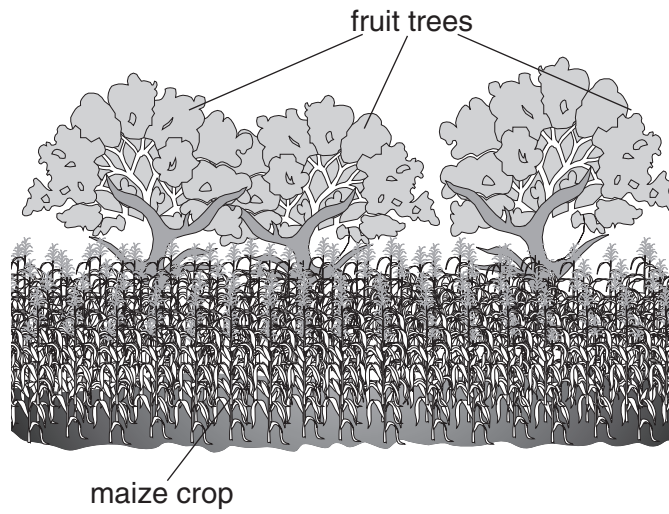


Fig. 2.3

The farmer sprayed the maize crop with insecticide at the time when the fruit trees were flowering. Later in the year the maize crop gave a good yield but the yield from the fruit trees was smaller than usual.

Suggest an explanation for these yields.

.....

.....

.....

.....

.....[4]

[Total: 11]

- 3 Fig. 3.1 shows a plastic bag being used to protect fruit from damage by birds. After a few days water had collected in the bag.

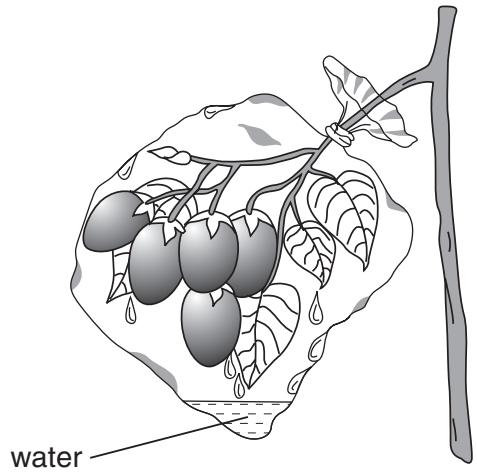


Fig. 3.1

- (a) Explain why water had collected in the bag.

.....
.....
.....[2]

- (b) State and explain a problem that is likely to arise from the water in the bag.

.....
.....
.....[2]

- (c) Suggest an alternative method of protecting the fruit from bird damage.

.....
.....[1]

[Total: 5]

4 Fig. 4.1 shows the yield of a cereal sown at different seed rates.



Fig. 4.1

(a) What is meant by *seed rate*?

.....[1]

(b) What is the lowest seed rate shown on the bar chart that will give a yield of 4.2 tonnes per hectare?

..... [1]

(c) What is the percentage (%) increase in yield when the seed rate doubles from 25 per m² to 50 per m²? Show your working.

Increase in yield% [2]

(d) At seed rates above 50 seeds per m² there is no increase in yield.

Suggest why yield does not continue to increase with higher seed rates.

.....
.....
.....
.....[3]

[Total: 7]

5 (a) Fig. 5.1 shows the digestive system of a non-ruminant animal.

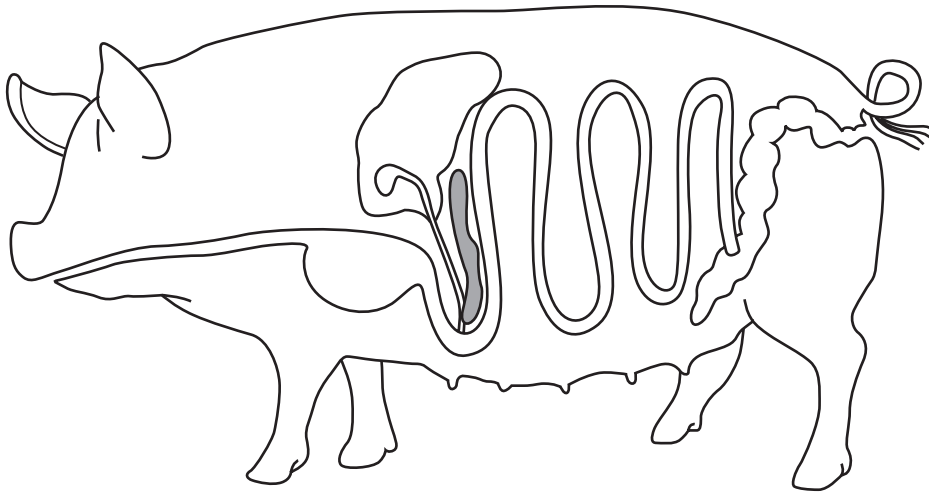


Fig. 5.1

On Fig. 5.1, name and label **three** structures where digestive enzymes are produced. [3]

(b) The major nutrients in an animal's diet are protein, carbohydrate and fat.

Suggest, with reasons, which nutrient should be increased in the diet of

(i) *a young, growing animal,*
reason,
 [2]

(ii) *an adult animal used for pulling a plough,*
reason.
 [2]

(c) Indicate with a ✓, the feedstuff which has the highest level of protein.

grass		cereal grains		bean meal	
-------	--	---------------	--	-----------	--

[1]

(d) Minerals are an essential part of an animal's diet.

Which mineral will be needed in increased quantities by a lactating animal?

..... [1]

[Total: 9]

6 (a) What is an *allele*?

.....
.....[2]

(b) In goats, the allele **A** for light coat is dominant to the allele **a** for dark coat. Using the symbols **A** and **a**, write the two homozygous genotypes for coat colour in goats and state the phenotypes that they produce.

1. *genotype* *phenotype*

2. *genotype* *phenotype* [2]

(c) *Inbreeding* is a technique used in livestock improvement.

(i) What is inbreeding?

.....
.....[1]

(ii) State **one** advantage and **one** disadvantage of inbreeding in livestock.

advantage

.....

disadvantage

.....[2]

[Total: 7]

7 Fig. 7.1 shows stages in constructing a fence.

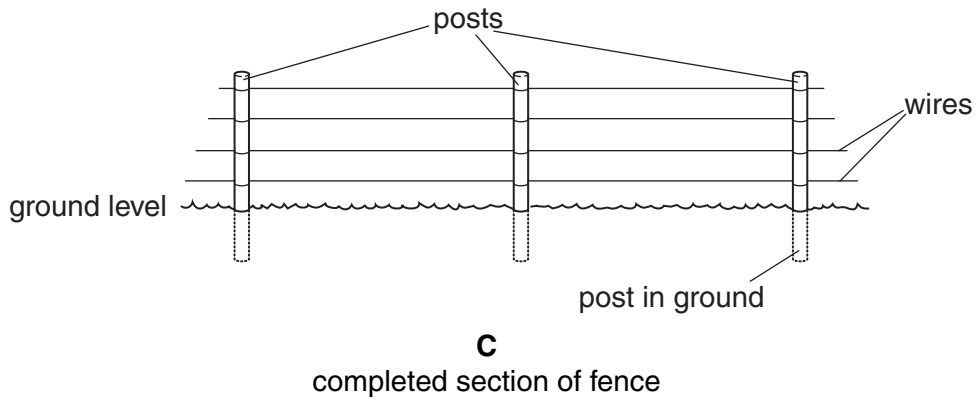
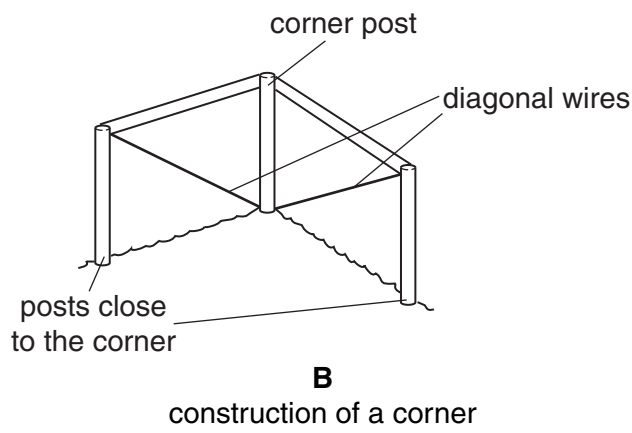
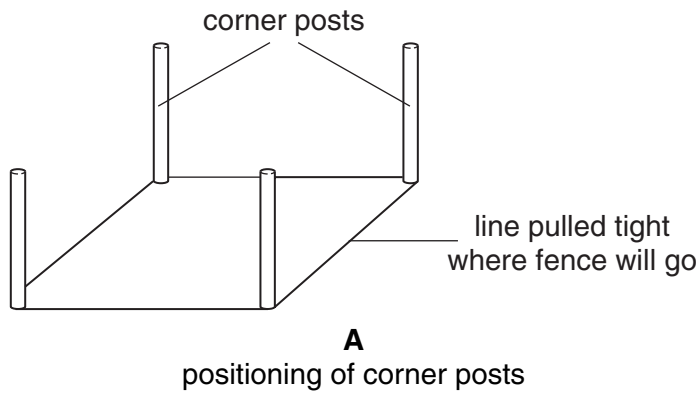


Fig. 7.1

(a) The first stage, **A**, shows the positioning of the corner posts.

Why are the corner posts put in first?

.....
.....
.....[2]

(b) The second stage, **B**, shows the construction of a corner.

(i) What is the purpose of the two posts close to the corner post, held by diagonal wires?

.....
.....[2]

(ii) Where else in fence construction would extra posts and diagonal wires be used?

.....[1]

(c) (i) Which factor would determine how closely the strands of wire should be set in the fence shown in **C**?

.....[1]

(ii) Describe the way in which the fence posts in Fig. 7.1 could be set in the ground to make them firm.

.....
.....
.....
.....[3]

(d) State **one** other type of fencing that could be used on a farm.

.....[1]

[Total: 10]

Section B

Answer any **three** questions.

Write your answers on the separate answer paper provided.

- 8 (a) For a **named** type of farm livestock that you have studied,
- (i) state the type of livestock and the products for which it is kept;
 - (ii) describe the routine care of the animals for one day. [7]
- (b) State and explain the factors that should be considered when choosing a site for a new livestock house. [8]
- 9 (a) Fertilisers may be inorganic chemicals or organic manure such as animal dung.
- Describe the advantages and disadvantages of the two types of fertiliser. [8]
- (b) Design and describe an experiment that could be used to compare the effects of two fertilisers on crop production. [7]
- 10 (a) (i) Name **three** grasses or legumes that may be sown to improve pasture used for grazing.
- (ii) For the plants that you have named, describe the characteristics that make them suitable as pasture plants. [7]
- (b) Explain the importance of controlling weeds in pasture. [3]
- (c) (i) Describe one method of conserving grass for feeding to livestock during winter or the dry season.
- (ii) Explain the reasons for doing this. [5]

- 11 (a) (i) List **four** sources of water that may be found on a farm and outline the use of each. Each is suitable.
- (ii) Explain why filtration is used in water treatment.
- (b) Fig. 11.1 shows a section through a tap.

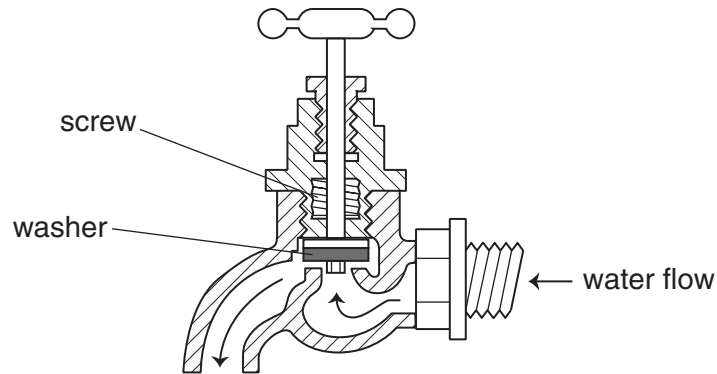


Fig. 11.1

Describe the method used to change the washer in the tap.

[4]

- 12 (a) A four-stroke **petrol** engine uses spark ignition but a four-stroke **diesel** engine uses compression ignition. Describe how ignition is brought about in each case. [10]
- (b) State and explain the factors that a farmer would consider when deciding whether to change from animal power to mechanisation on a farm. [5]

