Centre Number	Candidate Number	Name

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

AGRICULTURE **5038/01**

Paper 1

October/November 2006

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 pencil for any diagrams or graphs.
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.
Enter the numbers of the Section B questions you have answered in the grid below.

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	
Section B	
Total	

This document consists of **14** printed pages and **2** blank pages.

Section A

Answer **all** questions.

Write your answers in the spaces provided.

1 **(a)** Fig. 1.1 shows the strokes of a four-stroke petrol engine.

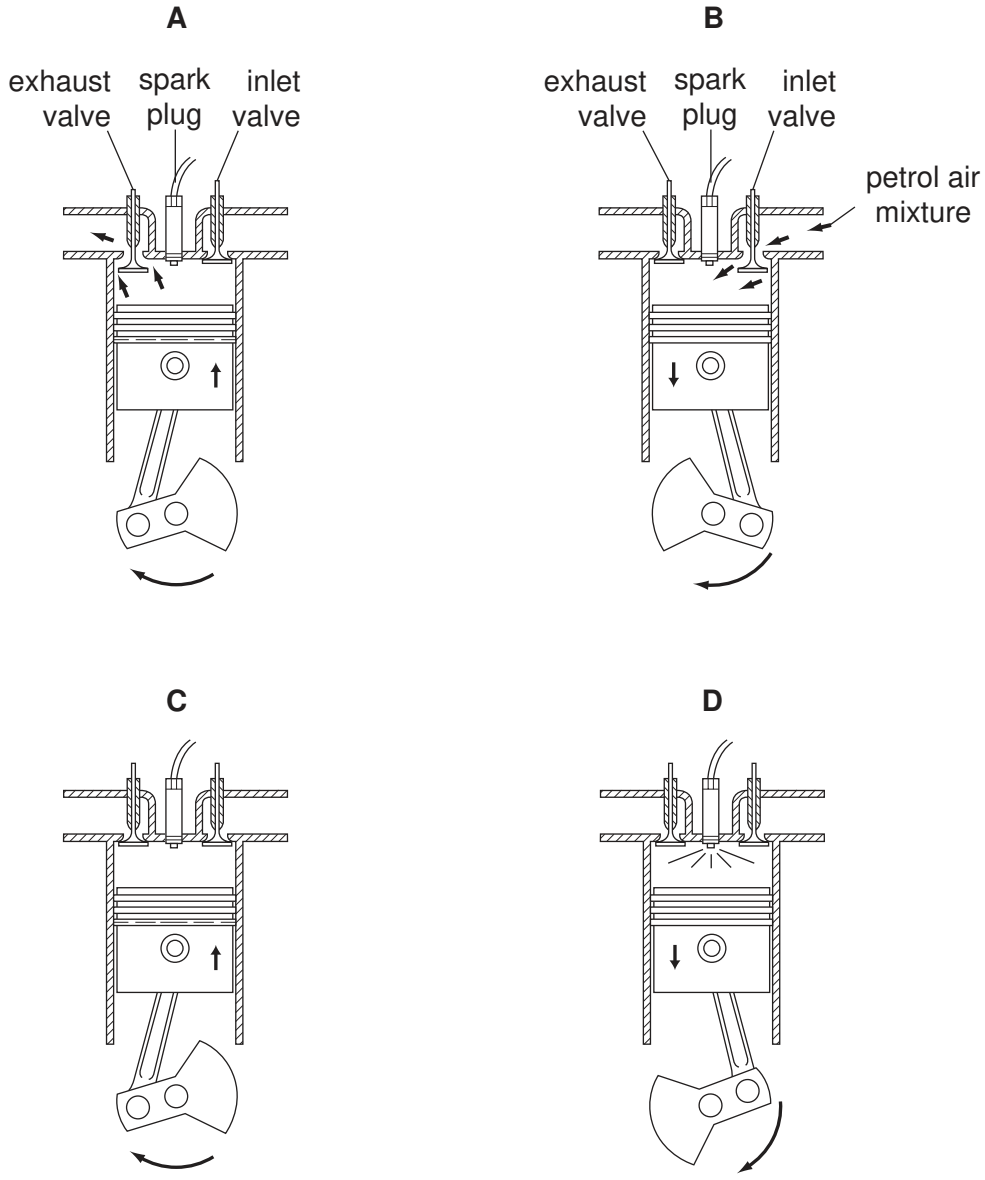


Fig 1.1

(i) Write down the correct order in which the strokes occur in the engine.

..... [1]

(ii) What is the name of each stroke?

A .....

B .....

C .....

D ..... [4]

(b) Regular checks should be made on the levels of oil and water in an engine. What is the function of oil and water in an engine?

oil .....

water ..... [2]

[Total: 7]

2 **(a)** What does the pH scale measure?

.....

[1]

(b) Explain why it is important to know the pH of soil that is used for growing crops.

.....

.....

.....

[2]

(c) A soil with the composition shown in Fig. 2.1 has a pH of 5.5.

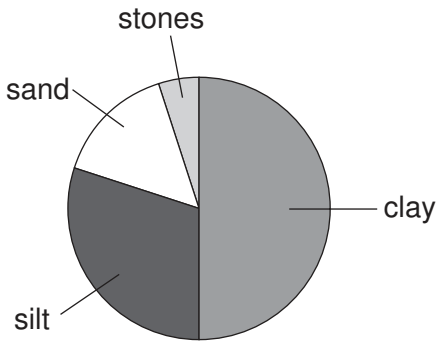


Fig. 2.1

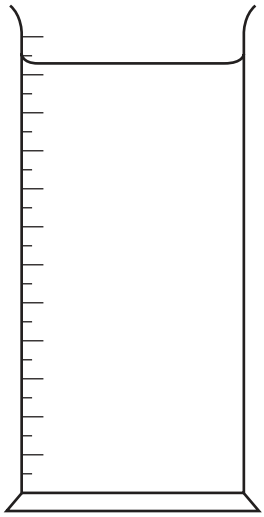
(i) Lime is added to the soil shown in Fig. 2.1.

State **two** ways in which adding lime would affect this soil.

1. .....

2. ..... [2]

(ii) A sample of the soil, shown in Fig. 2.1, is shaken with water and allowed to settle. Complete and label the diagram below, to show the sample after it has settled.



[2]

(iii) List **two** properties of a soil with the composition shown in Fig. 2.1.

1. .....

2. ..... [2]

[Total: 9]

3 **(a)** The application rate for a herbicide on a crop is 1.6 kg of herbicide in 200 litres of water per hectare.

(i) How much herbicide is needed for 0.25 hectares?
(*Show your working.*)

..... [2]

(ii) A knapsack sprayer holds 10 litres. How much of this herbicide should be mixed with 10 litres of water?
(*Show your working.*)

..... kg [1]

(b) When herbicide is sprayed on a crop, spray may drift to areas away from the crop that is being sprayed.

(i) Give **two** reasons why spray drift should be avoided.

1. .....

.....

2. .....

..... [2]

(ii) State **two** ways of reducing the risk that spray will drift.

1. .....

.....

2. .....

..... [2]

[Total: 7]

4 Fig. 4.1 shows two cultivars of a cereal crop.

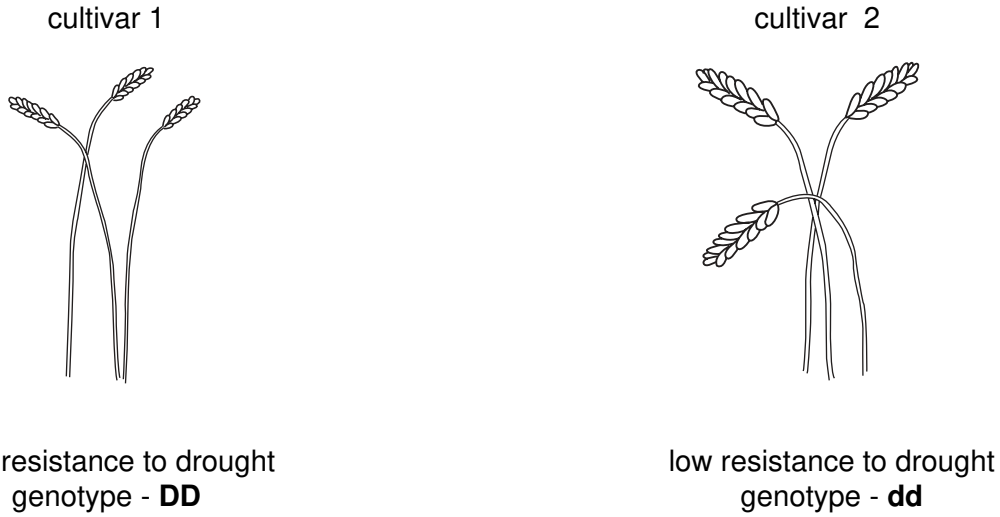


Fig. 4.1

A farmer plants F1 hybrid seeds that have been produced by crossing these two cultivars.

(i) State the genotype of the F1 hybrid seed.

.....

[1]

(ii) Look at Fig. 4.1. Explain why the cereal plants from F1 hybrid seeds **might** be better than either of the two parent cultivars.

.....

.....

.....

[2]

(iii) The farmer saves seeds from the F1 hybrid crop. When these seeds are grown the plants do not all show the same resistance to drought. Using a genetic diagram, explain why this would happen.

.....

[3]

[Total: 6]

5 **(a)** Table 5.1 shows the stocking rate and carrying capacity for five districts in an area where livestock are grazed on unenclosed land.

Table 5.1

district	stocking rate / hectares per livestock unit	carrying capacity / hectares per livestock unit
A	9	16
B	24	9
C	12	12
D	3	12
E	77	26

(i) State **one** district that is correctly stocked.

..... [1]

(ii) State **one** district that is over-stocked.

..... [1]

(iii) Explain what is meant by *over-stocking*.

.....

..... [2]

(b) Overstocking leads to overgrazing. State the effects that this will have on:

(i) the soil;

.....

.....

.....

(ii) the plants that are grazed;

.....

.....

.....

(iii) the animals that are grazing.

.....

.....

..... [5]

[Total: 9]

6 **(a)** Describe **two** ways of preventing soil erosion on sloping land that is cultivated for crops.

1. .....

.....

2. .....

..... [4]

Fig. 6.1 shows a slope with permanent grass cover and a slope with a crop of millet.

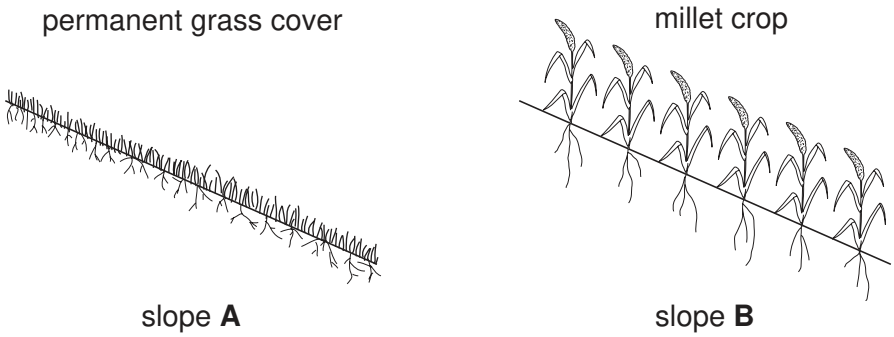


Fig. 6.1

Run-off from rainfall can wash away large amounts of soil on sloping land.
Table 6.1 compares the effect on this of growing grass on a slope and growing a crop of millet on a slope.

Table 6.1

	grass-covered slope **A**	millet-covered slope **B**
soil lost / tonnes per hectare	0	78
water run-off / % of rainfall	1.9	20

(b) Describe the difference in the amount of soil lost between the two slopes **A** and **B** in Fig. 6.1.

soil lost .....

..... [1]

Describe the difference in the amount of water run-off between the two slopes **A** and **B** in Fig. 6.1.

water run-off .....

..... [1]

(c) Suggest **three** reasons for the differences in the amount of soil lost and water run-off on the slopes **A** and **B** in Fig. 6.1.

1. .....

.....

2. .....

.....

3. .....

..... [3]

[Total: 9]

7 **(a)** State **three** conditions that seeds need for germination.

1. .....

2. .....

3. ..... [3]

(b) Fig. 7.1 shows some actions taken after sowing seed.

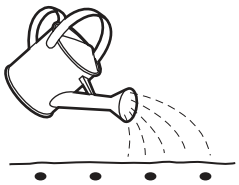
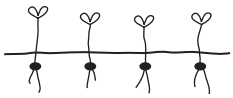
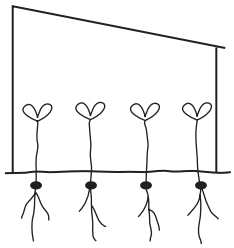
			
watering seeds	mulching with grass	removing mulch carefully when seeds germinate	shading young plants

Fig. 7.1

Suggest the purpose of:

(i) mulching;

.....

(ii) removing the mulch when the seeds germinate;

.....

(iii) shading the young plants.

..... [3]

(c) A farmer collects seed. He stores the seed to sow the next year.
State **two** conditions needed for storage so that the seed would be able to germinate the next year.

1. .....

2. ..... [2]

[Total: 8]

Section B

Answer any **three** questions.

Write your answers on the separate answer paper provided.

Use labelled or annotated diagrams where they help to make your answers more easily understood.

8 Describe the role and explain the importance of micro-organisms in:

(a) digestion in ruminants;

(b) producing humus in soil;

(c) nitrogen fixation.

[Total: 15]

9 **(a)** For a type of farm livestock that you have studied:

(i) give the name of the type of livestock;

(ii) list the products and by-products obtained from the livestock;

(iii) describe the storage and processing of **one** of the products for market. [5]

(b) State what is meant by:

(i) maintenance ration;

(ii) production ration. [3]

(c) For the livestock named in (a), describe its feeding from birth to maturity. [7]

[Total: 15]

10 **(a)** For a named type of livestock kept in housing:

(i) name the type of livestock for which the housing is built;

(ii) state the materials used to build the housing and explain why they are chosen; [6]

(iii) describe how the building would provide suitable living conditions for the livestock you have named. [6]

(b) A saw, hammer and screwdriver are tools that may be used in building a livestock house.

Outline how the tools should be looked after, to keep them in good condition. [3]

[Total: 15]

11 Explain, using examples, how the choice of crop grown on a farm may depend on:

(i) climate;

(ii) soil and topography;

(iii) availability of labour;

(iv) roads and transport;

(v) markets.

[Total: 15]

12 **(a)** Mixed farming is growing crops and keeping livestock on one farm.

Explain the advantages of this type of farming. [4]

(b) **(i)** Outline the reasons for monoculture in commercial farming.

(ii) State the problems that monoculture may produce. [7]

(c) Explain the advantages of crop rotation. [4]

[Total:15]

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