

Centre Number	Candidate Number	Name
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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	
<b>Section A</b>	
<b>Section B</b>	<del>                    </del>
<b>Total</b>	

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.

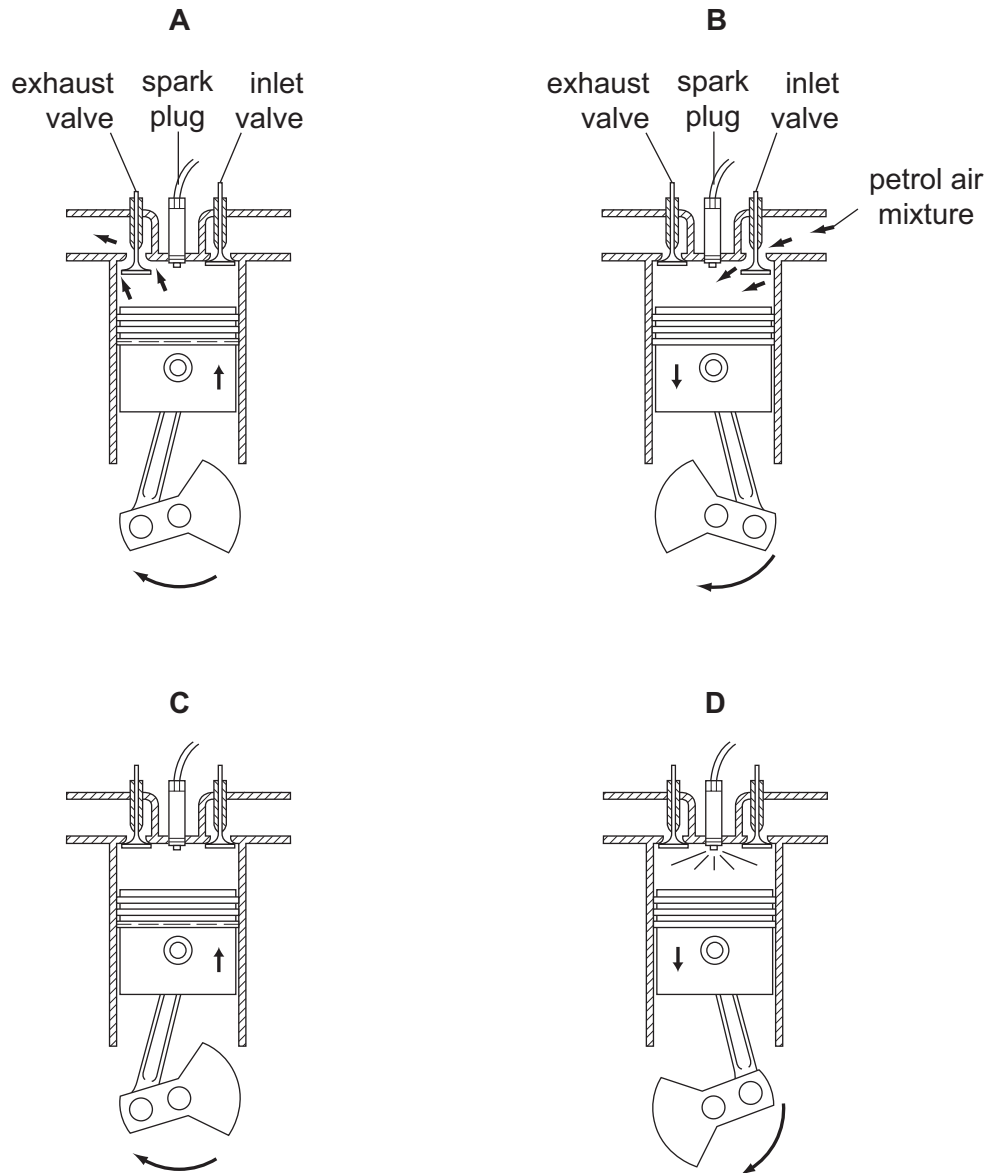


Fig 1.1

(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.

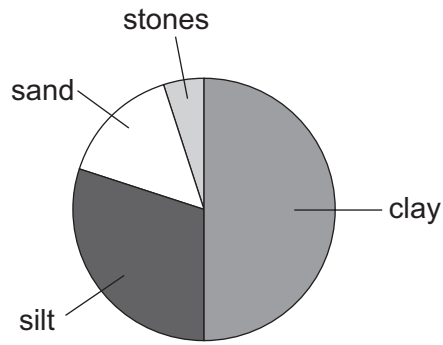


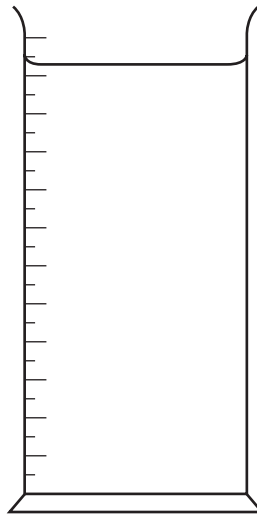
Fig. 2.1

(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. .... [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. .... [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
<b>A</b>	9	16
<b>B</b>	24	9
<b>C</b>	12	12
<b>D</b>	3	12
<b>E</b>	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.

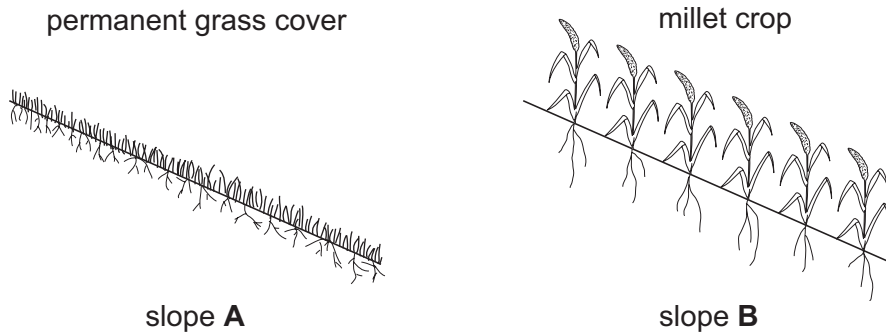


Fig. 6.1

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.

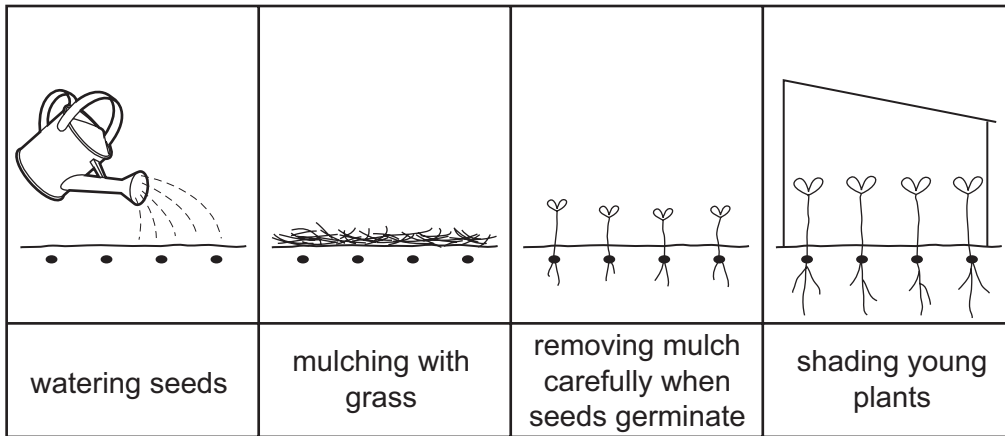


Fig. 7.1

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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