



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
General Certificate of Education Ordinary Level

CANDIDATE  
NAME

CENTRE  
NUMBER

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NUMBER

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**AGRICULTURE**

**5038/01**

Paper 1

**May/June 2010**

**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 or graphs.  
Do not use staples, paper clips, highlighters, glue or correction fluid.  
**DO NOT WRITE IN ANY BARCODES.**

**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>	/
<b>Total</b>	

This document consists of **13** printed pages and **3** blank pages.

Section A

Answer **all** the questions

1 Fig. 1.1 shows four hand tools that can be used when preparing a seed bed.

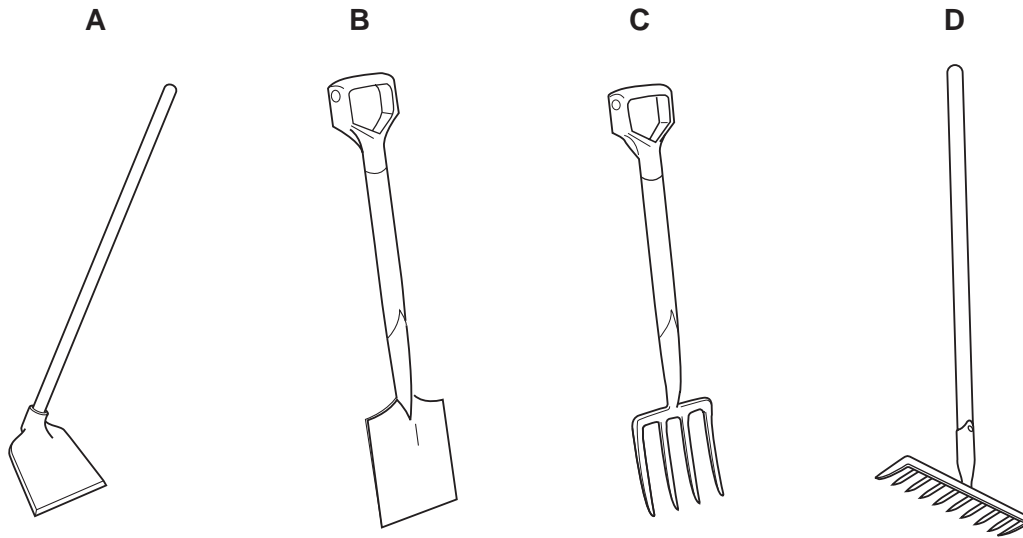


Fig.1.1

Choose **one** of the tools shown in Fig. 1.1.

(a) State which tool, **A, B, C** or **D**, you have chosen.

.....

Explain the purpose of this tool in preparing a seed bed.

.....

.....

..... [2]

(b) (i) Describe how rust could be prevented on the metal part of the tool.

.....

.....

.....

..... [3]

(ii) State **one** way in which the wooden part of the tool might deteriorate over time.  
.....  
..... [1]

(iii) Describe action that could be taken to prevent this damage.  
.....  
.....  
..... [2]

[Total: 8]

2 (a) Give the name of a type of farm livestock that is

(i) a ruminant, .....

(ii) a non-ruminant. .... [1]

(b) For **one** of the animals you have named in (a):

(i) state which animal you have chosen; .....

state the **main** purpose for which this animal is kept;

..... [1]

(ii) state **one** useful by-product from this animal.

..... [1]

(c) Iron, protein and water are essential parts of an animal's diet.

Outline how each is used by the animal.

iron .....

.....

.....

protein .....

.....

.....

water .....

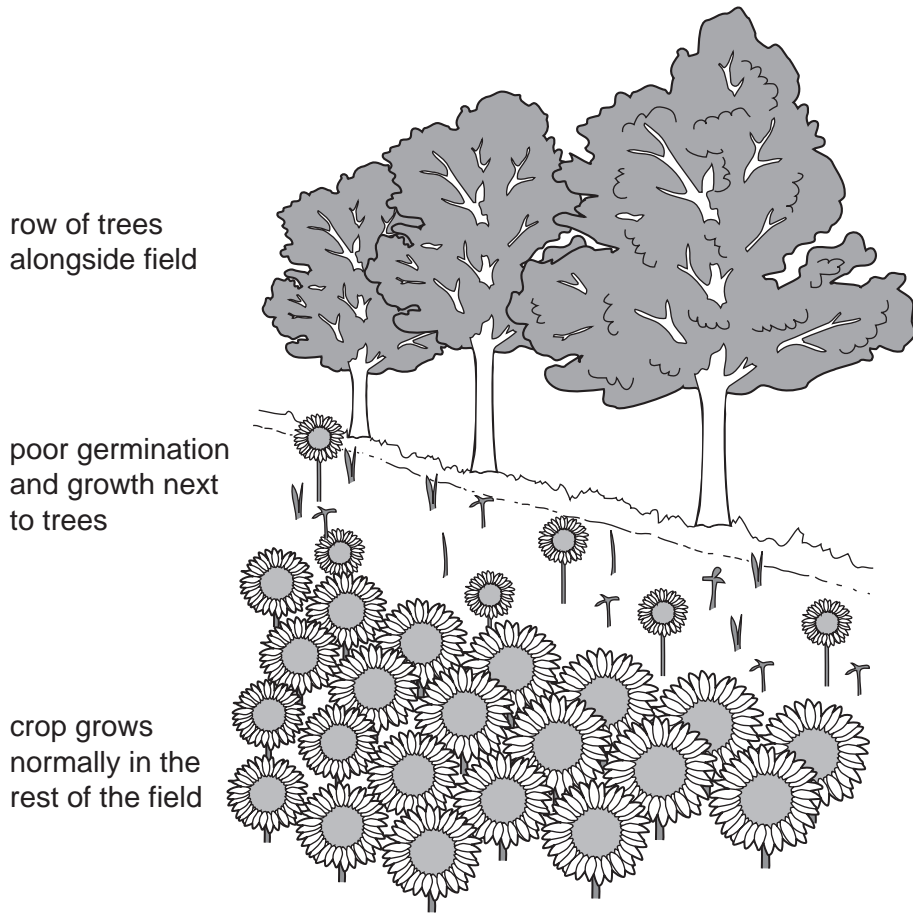
.....

..... [6]

[Total: 9]

Turn over for Question 3

3 Fig. 3.1 shows a field with a crop of sunflowers. There is a row of trees along one side of the field. Sunflower seed was sown at the same rate across the whole field.



row of trees  
alongside field

poor germination  
and growth next  
to trees

crop grows  
normally in the  
rest of the field

Fig. 3.1

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

..... [1]

(ii) Suggest **one** reason for poor germination close to the row of trees.

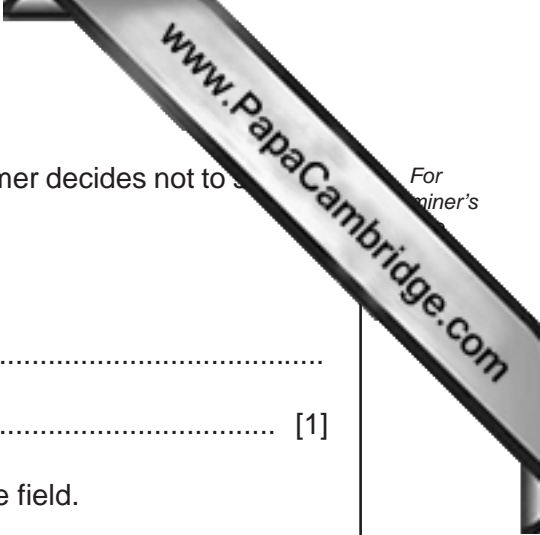
.....  
..... [1]

(iii) Suggest **two** reasons for the poor growth of the plants close to the row of trees.

1 .....

2 .....

[2]



(b) (i) As a result of the poor plant growth near the trees, the farmer decides not to use the field margin in the following year.

Suggest a reason for this decision.

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

(ii) If the trees were removed, the farmer could use the whole field.

Suggest **one** reason for keeping the trees.

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

**[Total: 6]**

4 Fig. 4.1 shows the result of mating a polled (no horns) bull with a herd of horned cows

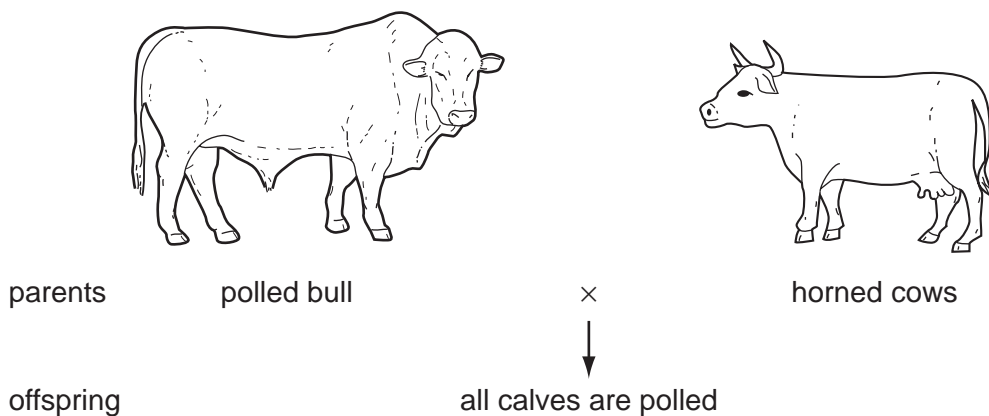


Fig. 4.1

(a) (i) All the calves produced are polled. What does this show about the allele controlling the polled condition?

..... [1]

(ii) Using suitable symbols for the alleles, state the genotypes of the parents and of the calves.

alleles: polled = ..... horned = .....

genotype of bull .....

genotype of cows .....

genotype of calves ..... [4]

(b) (i) A farmer predicts that if a male from the offspring in Fig.4.1 mates with the females from the offspring in Fig.4.1, some of the calves produced would have horns. What percentage of the calves would be expected to have horns? (Show your working.)

..... % [2]

(ii) Suggest **one** reason why a farmer might prefer to keep cattle without horns.

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

[Total: 8]



5 A farmer spreads lime on the soil at the rate of 0.3 kg per m<sup>2</sup>.

(a) How much lime will be needed for one hectare of land? (1 hectare = 100 m × 100 m)  
(Show your working.)

..... kg per ha [1]

(b) How will adding lime affect the pH of the soil?

..... [1]

(c) Suggest **one** benefit of changing the soil pH on land that is used for growing crops.

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

(d) Apart from the benefit you gave in (c), state and explain **one other** benefit of adding lime to a clay soil.

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

[Total: 5]

- 6 Fig. 6.1 shows the life cycle of an insect pest called a leaf miner. Adults pierce the leaf to feed on the sap and to lay their eggs inside the leaf.

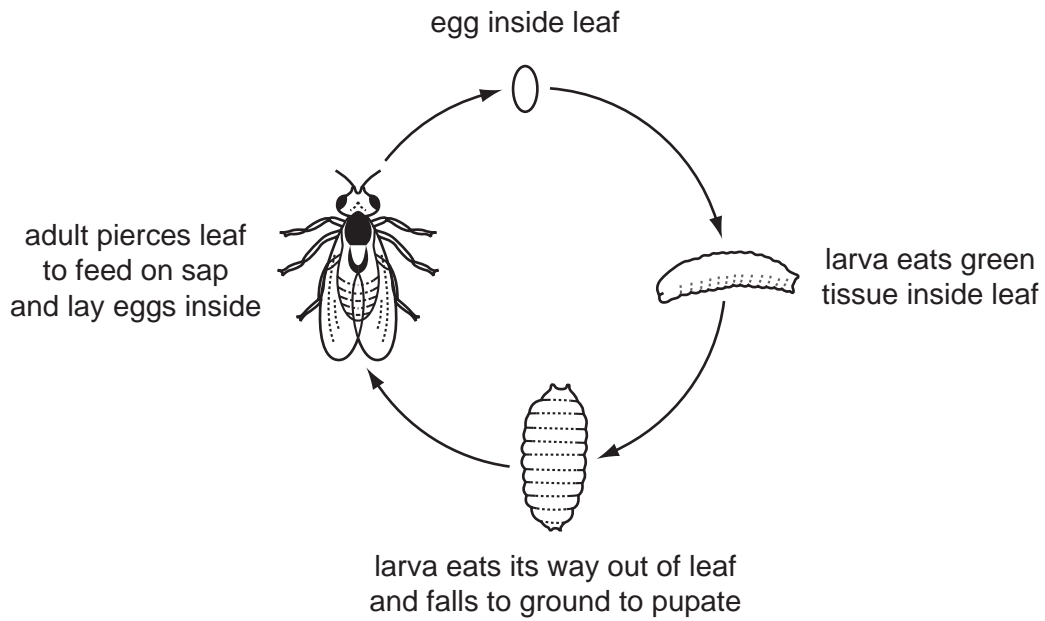


Fig. 6.1

- (a) Explain how feeding and egg-laying in the plant, by the adult, could result in disease.

.....

.....

..... [2]

Fig. 6.2 shows the damage caused to a leaf by the larva of a leaf miner.

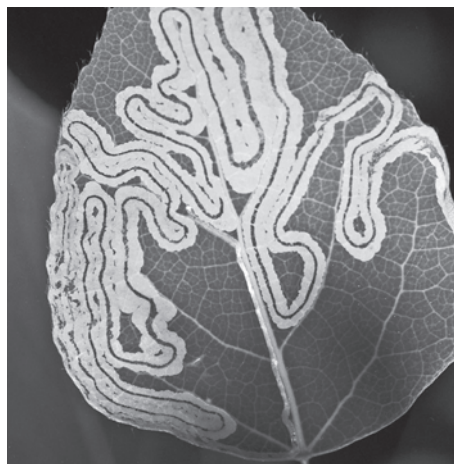
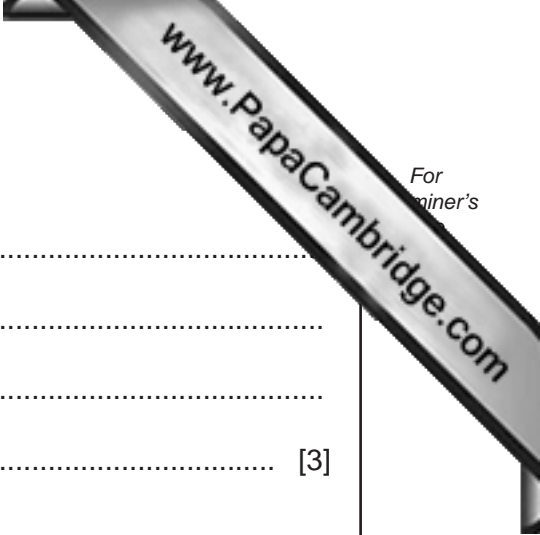


Fig. 6.2



(b) Explain how the damage caused could reduce crop yield.

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

(c) A systemic insecticide can be used to control leaf miners. They can also be controlled by using an insect predator.

(i) State how an insect predator can control an insect pest.

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

(ii) Explain why a systemic insecticide would be more effective than a contact insecticide.

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

(iii) On a food crop, why could it be better to control leaf miners with a predator than with a systemic insecticide?

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

(iv) Look at Fig. 6.1 showing the life cycle of the leaf miner. Suggest **two other** ways in which it could be controlled.

1 .....  
2 ..... [2]

[Total: 12]

7 Fig. 7.1 shows the strokes of a four-stroke petrol engine cycle, but **not** in the order in which they occur.

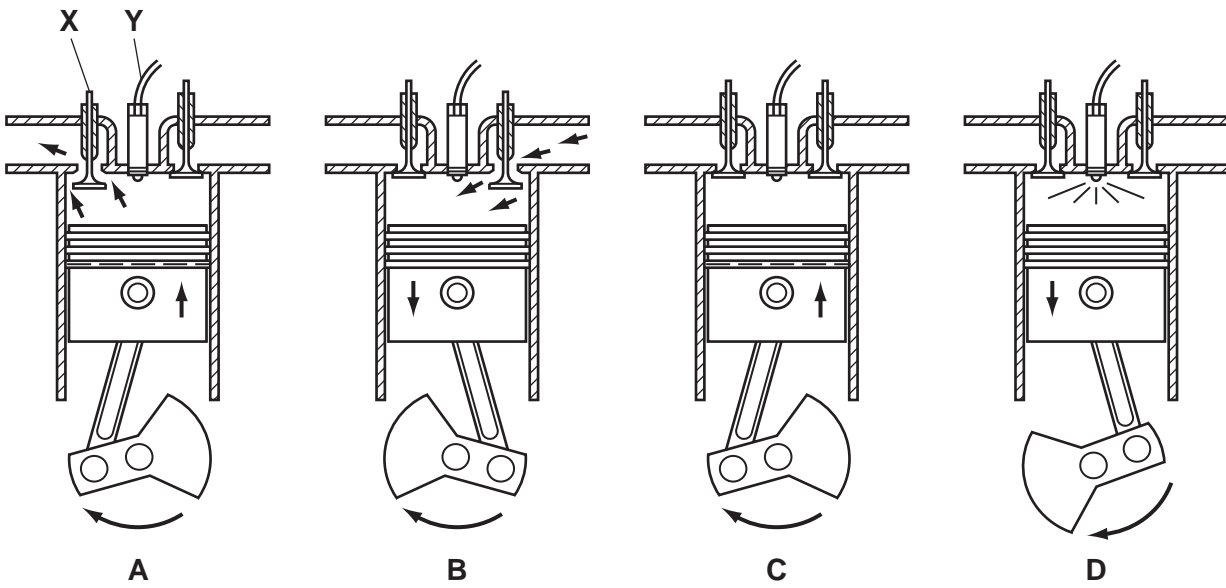


Fig. 7.1

(a) (i) Starting with **B**, list the order in which the strokes occur.

[1]

(ii) State the name of part **X**.  
..... [1]

(iii) State the function of part **Y**.  
..... [1]

(b) (i) State **two** advantages that mechanisation can bring to a farmer.

1 .....  
.....  
2 .....  
..... [2]

(ii) State **two** reasons why a farmer might choose to use animal power rather than a tractor.

1 .....  
.....  
2 .....  
..... [2]

[Total: 7]

## Section B

Answer any **three** questions.

Write your answers on the separate answer paper provided.

- 8 (a) Describe a system of rotational grazing. [5]
- (b) Explain the advantages of rotational grazing systems. [6]
- (c) Describe methods of conserving pasture as forage for the dry season. [4]
- 9 (a) The same crop is grown on a plot of land for ten years. Over this time, crop yield falls and pests and diseases of the crop increase.
- (i) Explain why these problems build up. [3]
- (ii) Explain why crop rotation can help to prevent these problems. [5]
- (b) Legumes, grown as part of a crop rotation plan, play a part in the nitrogen cycle. Use a labelled diagram to describe the nitrogen cycle. [7]
- 10 (a) State what is meant by *transpiration*. [3]
- (b) Describe the effects on transpiration of
- (i) temperature,
- (ii) humidity,
- (iii) wind. [8]
- (c) Explain the importance of transpiration to a plant. [4]

- 11 (a) Explain how each of the following can help to prevent disease in livestock:
- (i) suitable housing;
  - (ii) clean water;
  - (iii) control of insects;
  - (iv) the separation of old and young stock. [12]
- (b) Healthy, breeding animals are sometimes culled (removed and killed). Suggest reasons why a farmer might do this. [3]
- 12 (a) (i) State what is meant by a *cultivar* of a plant. [1]
- (ii) Outline the factors that a farmer would consider when choosing a crop cultivar. [7]
- (b) Farm records can help a farmer to select the best crops and cultivars to grow. Describe the records a farmer could keep to help in making this selection. [7]



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*Copyright Acknowledgements:*

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