



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
General Certificate of Education Ordinary Level

CANDIDATE  
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**AGRICULTURE**

**5038/01**

Paper 1

**October/November 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 **17** printed pages and **3** blank pages.



Section A

Answer **all** the questions.

1 Fig. 1.1 shows part of the carbon cycle.

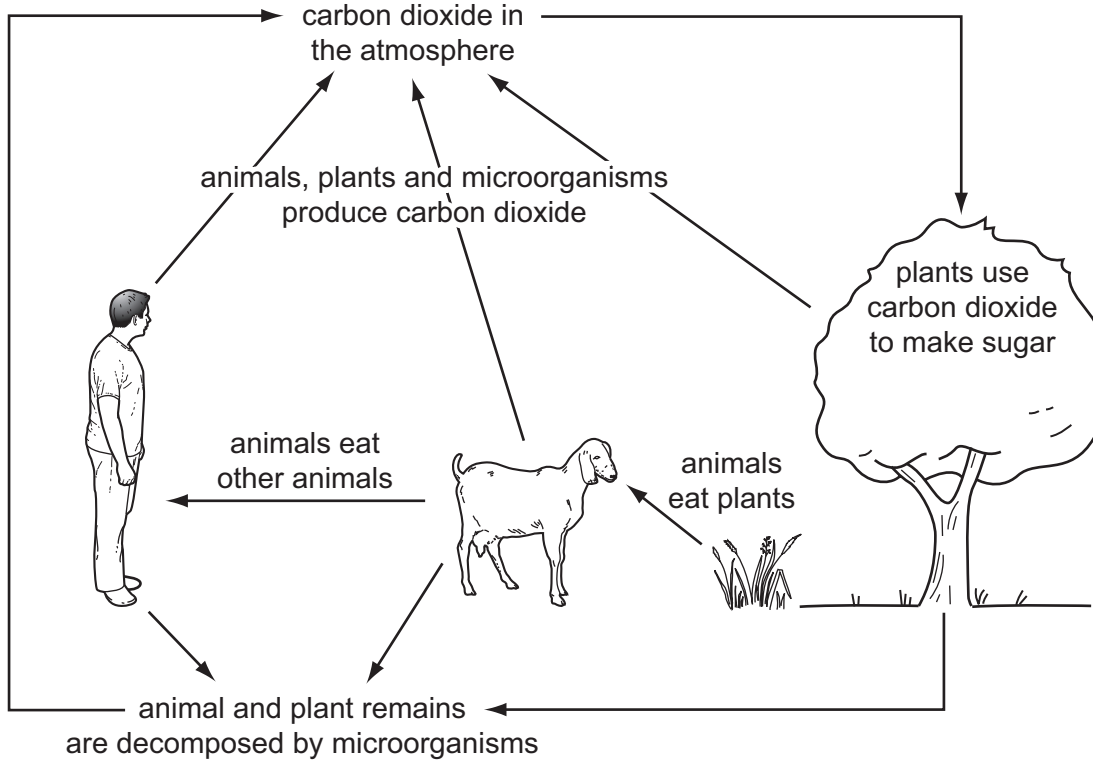


Fig. 1.1

(a) (i) Name the process by which plants use carbon dioxide to make sugar.

..... [1]

(ii) State **two** requirements for this process to occur.

1 .....

2 ..... [2]

(iii) Name the process by which animals, plants and microorganisms produce carbon dioxide.

..... [1]

(b) Fig. 1.2 shows a section through the stem of a plant.

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Examiner's  
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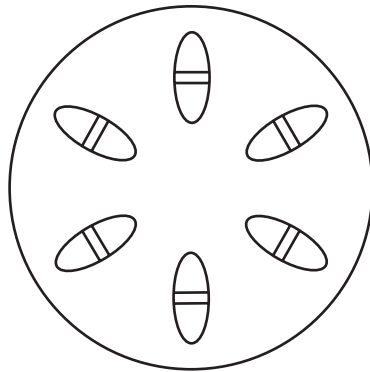


Fig. 1.2

- (i) Draw a line and label it with letter **P**, to show the tissue through which manufactured sugar is transported through the stem. [1]
- (ii) State **one** way in which the manufactured sugar is used in the plant.

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

[Total: 6]

2 A farmer decides to keep animals in a fenced pasture and to grow vegetables in the garden. Before the pasture is used, it is sprayed with a selective hormone-based herbicide, to kill weeds.

(a) (i) What is meant by **selective** herbicide?

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

(ii) State **two** reasons for killing weeds in pasture.

1 .....

2 .....

(iii) Animals are grazed on the pasture. The manure is collected and put on land which is later used to sow vegetables. When the vegetables grow, they show distorted foliage, as shown in Fig. 2.1.

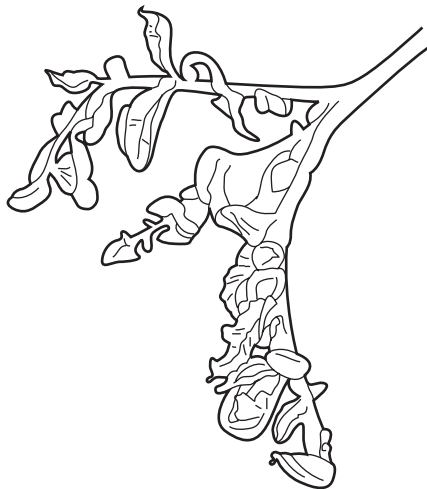


Fig. 2.1

Suggest **one** way in which the herbicide could have reached the vegetable crop.

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

(b) Fig. 2.2 shows two spray operators. **A** has tucked his trousers into his boots. **B** has left his trousers over the top of his boots.

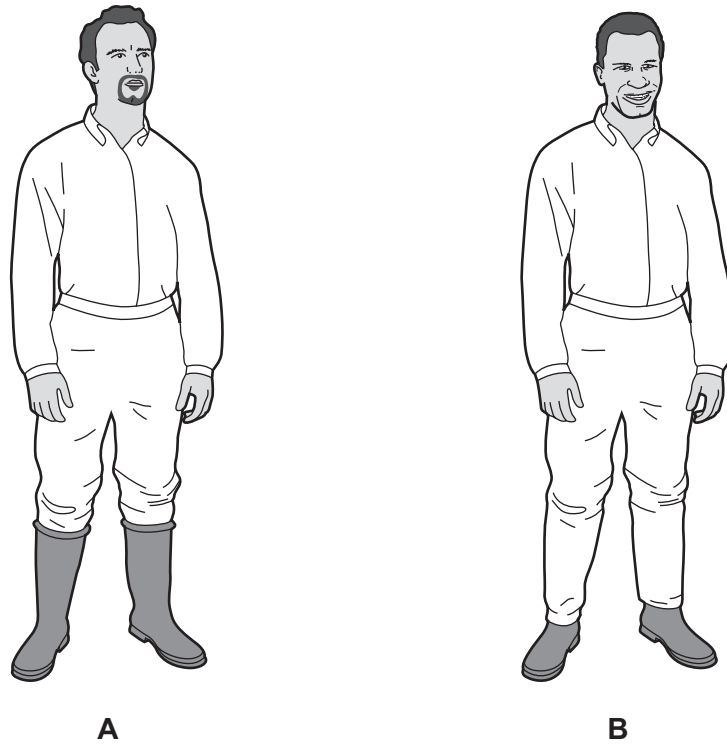


Fig. 2.2

(i) Explain why operator **A** should **not** tuck his trousers into his boots when spraying.

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

(ii) Explain why spraying should **not** be carried out in windy conditions.

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

(iii) Explain why spraying should **not** be carried out when it is raining.

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

[Total: 10]

3 A farmer constructs a post and rail fence. Some of the processes involved are shown below.

(a) Fig. 3.1 shows fence posts soaking in a metal container containing creosote.

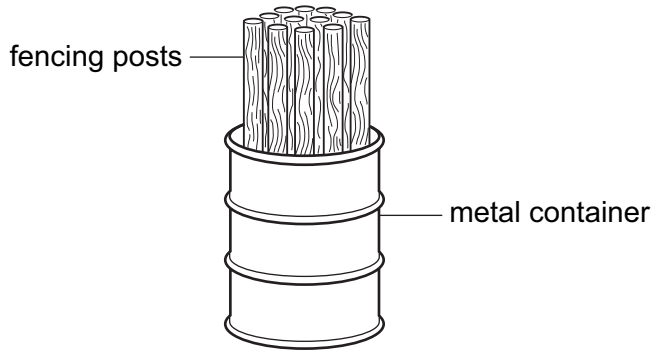


Fig. 3.1

State **two** reasons for soaking fence posts in creosote before using them.

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

(b) Fig. 3.2 shows a fence post being set into the ground.

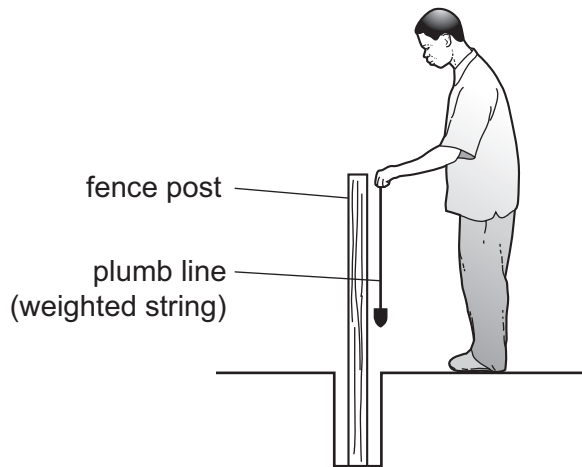


Fig. 3.2

State the purpose of the plumb line.

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

(c) Fig. 3.3 shows part of the completed fence.

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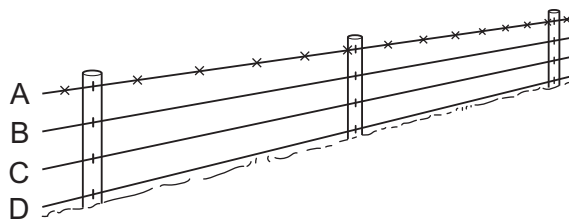


Fig. 3.3

(i) Describe how a farmer can make sure that the fence posts are in a straight line when he constructs the fence.

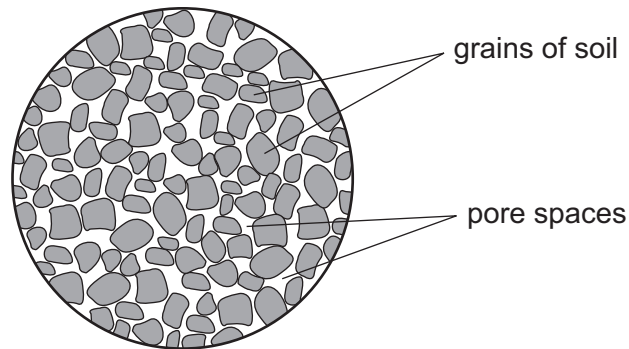
.....  
.....  
..... [2]

(ii) State which strand of wire should be attached to the posts first. Explain the reason for your answer.

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

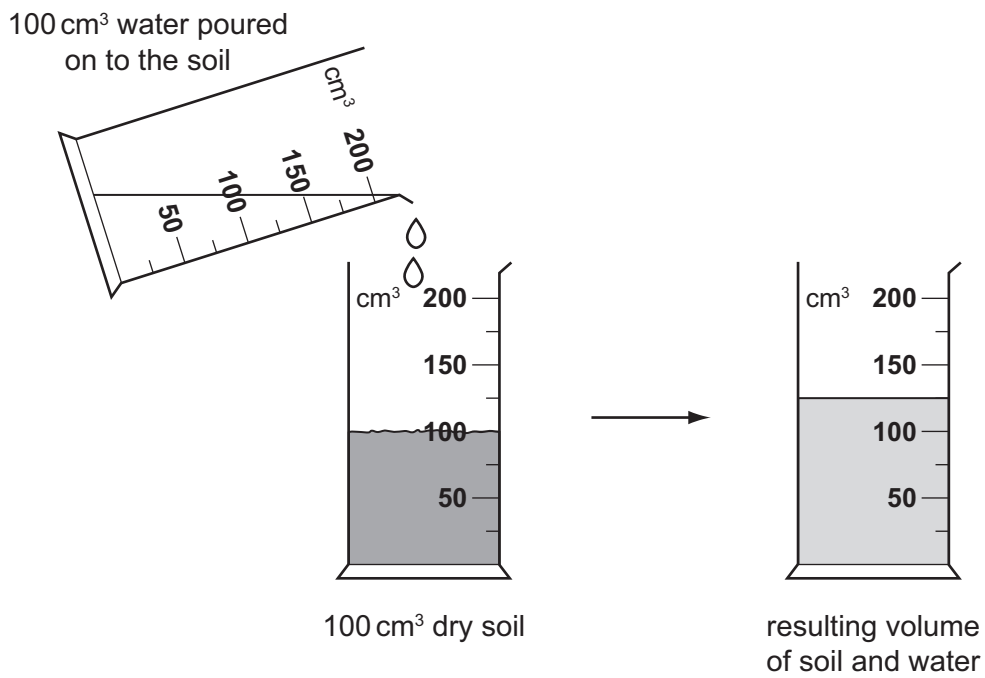
[Total: 7]

- 4 Fig. 4.1 shows a sample of soil seen down a microscope.



**Fig. 4.1**

In an experiment to find the volume of soil occupied by pore spaces,  $100\text{ cm}^3$  water was poured on to  $100\text{ cm}^3$  dry soil. The result is shown in Fig. 4.2.



**Fig. 4.2**



(a) (i) What is the volume in the cylinder when the water has been added to the soil?  
..... cm<sup>3</sup> [1]

(ii) What percentage (%) of this soil is pore spaces? (*Show your working.*)  
..... % [1]

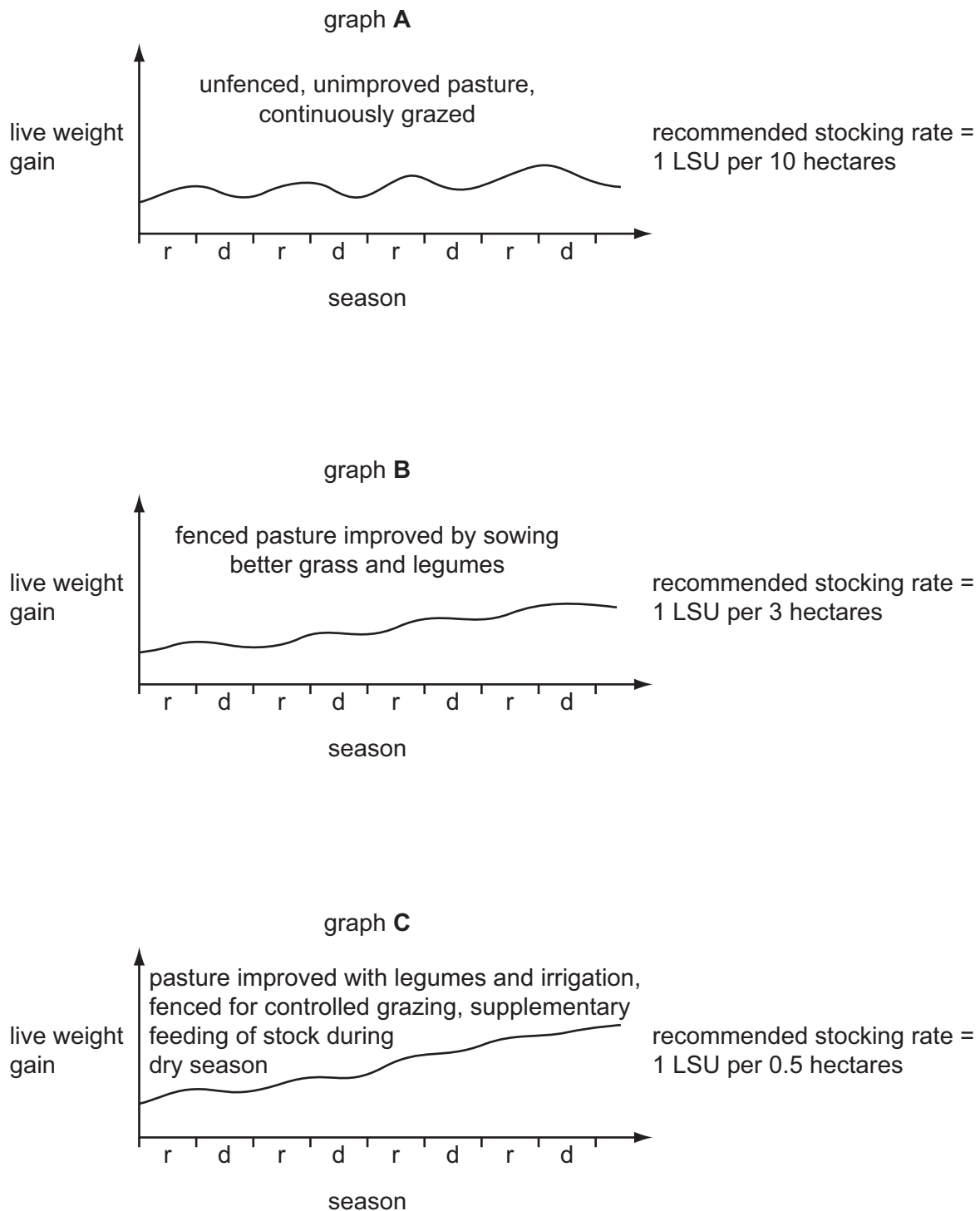
(b) (i) Apart from water, state **one other** thing found in the pore spaces in soil.  
..... [1]

(ii) In a waterlogged soil, pore spaces are filled with water.  
Explain why this can cause the death of plants.  
.....  
.....  
..... [2]

**[Total: 5]**

- 5 The graphs in Fig. 5.1 show the live weight gain of cattle over several rainy (r) and dry (d) seasons.

Each graph represents different grazing conditions and stocking rates.



**Fig. 5.1**

(a) (i) What happens to the live weight of cattle, during the dry season, in graph **A**?  
..... [1]

(ii) Suggest **two** reasons why this occurs.  
1 .....  
2 ..... [2]

(b) Graph **B** shows the effects of fencing and improving pasture with legumes. State **two** ways that live weight gain in graph **B** differs from that in graph **A**.  
1 .....  
.....  
2 .....  
..... [2]

(c) Graph **C** shows the effects of controlling grazing with fencing, improving pasture with irrigation and planting legumes and feeding supplements to cattle in the dry season. All these are extra expenses to the farmer.  
Use information from Fig. 5.1 to give **two** reasons why he might consider the expense to be worthwhile.  
1 .....  
.....  
2 .....  
..... [2]

(d) Fig. 5.1 shows the recommended stocking rates for different types of pasture. Explain why it is unwise to exceed these rates.  
.....  
.....  
.....  
..... [3]

[Total: 10]

6 A farmer sows a field of maize at a seed rate of 60 000 per hectare. 1 kg of maize contains 3000 seeds.

(a) How many kilograms of seed will the farmer need to sow one hectare? (*Show your working.*)

..... kg [1]

(b) 50 000 seeds germinate per hectare.

(i) Calculate the percentage (%) germination. (*Show your working.*)

..... % [2]

(ii) Suggest **two** reasons why some of the seeds have not germinated.

1 .....

2 ..... [2]

(c) Fig. 6.1 shows a crop of maize grown in rows and a crop of maize grown with groundnuts (a legume) planted between the rows.



maize grown in rows



maize grown in rows, groundnuts planted between the rows

Fig. 6.1

(i) Suggest **one** advantage of growing groundnuts between the rows of maize.

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

(ii) Suggest **one** disadvantage of growing groundnuts between the rows of maize.

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

**[Total: 7]**

7 Fig. 7.1 shows the life cycle of a parasite that can infect cattle.

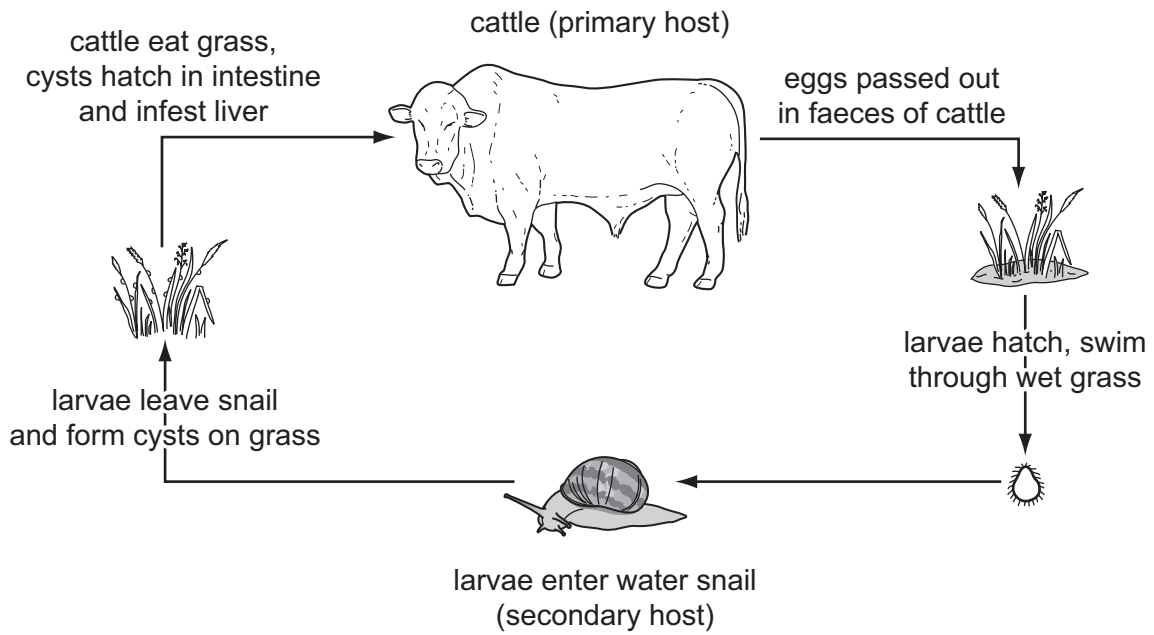


Fig. 7.1

(a) Parasites can be controlled by breaking their life cycle. Use the information in Fig. 7.1 to suggest two ways in which this could be done.

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

(b) Fig. 7.2 shows part of a record that could be kept for a livestock enterprise.

| inputs  | cost/\$ | outputs | return/\$ |
|---------|---------|---------|-----------|
| feed    |         | meat    |           |
| water   |         | skins   |           |
| input 3 |         |         |           |
| input 4 |         |         |           |

Fig. 7.2

(i) Suggest what input 3 and input 4 might be.

input 3 .....

input 4 .....

[2]

(ii) Explain how such a record could be used to calculate profit or loss.

.....

.....

..... [2]

(c) (i) A farmer has a flock of goats. He wants to improve the quality of his animals by selecting the best animals for breeding.

Suggest **two** records that he should keep for each animal, in order to be able to select the best animals.

1 .....

.....

2 .....

..... [2]

(ii) State **two** benefits of using artificial insemination (AI) in animal breeding.

1 .....

.....

2 .....

..... [2]

[Total: 10]

## Section B

Answer any **three** questions.

Write your answers on the separate answer paper provided.

- 8 (a) Describe ways in which water can be collected and stored for use on a farm. [6]
- (b) (i) Describe **one** method of irrigating field crops. [3]
- (ii) Outline the advantages and disadvantages of irrigating crops. [6]
- 9 (a) Name and describe the function of each chamber in a ruminant's stomach. [10]
- (b) For a **named** type of farm livestock, describe its feeding requirements from birth to maturity. [5]
- 10 (a) For a crop that is important in your area:
- (i) state the name of the crop;
- (ii) describe the soil and climate requirements needed to grow this crop successfully. [6]
- (b) For an insect pest that affects the crop named in (a):
- (i) state the name of the insect pest;
- (ii) describe the damage caused by this insect; [3]
- (iii) outline methods of controlling this insect. [6]
- 11 (a) Describe the purpose of using a mouldboard plough. [3]
- (b) Describe how to maintain this implement. [6]
- (c) A farmer who cultivates a large area of land uses a tractor for soil cultivation and harvest. A farmer who cultivates a small area continues to use hand tools.
- Suggest and explain the reasons for this. [6]



**12 (a)** Using named examples, describe how flowers are adapted for pollination by

**(i)** wind,

**(ii)** insects.

[8]

**(b) (i)** Using an example, describe how asexual reproduction can be used in the production of a crop. [3]

**(ii)** State the advantages of producing plants by asexual reproduction.

[4]





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*Copyright Acknowledgements:*

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Question 5      © G Owen; *O Level Agriculture*; Longman UK; 1984.

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