

Centre Number	Candidate Number	Name
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**CAMBRIDGE INTERNATIONAL EXAMINATIONS**  
International General Certificate of Secondary Education

**AGRICULTURE**

**0600/02**

Paper 2

October/November 2003

**1 hour**

Candidates answer on the Question Paper.  
No additional materials are required.

**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 in the spaces provided on the Question Paper.  
You may use a soft pencil for any diagrams, graphs or rough working.  
Do not use staples, paper clips, highlighters, glue or correction fluid.

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

**For Examiner's Use**

1	
2	
3	
4	
5	
6	
<b>Total</b>	

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.

- 1 (a) Fig. 1.1 shows a student carrying out a handling test ('sausage' test) on a soil sample. The soil sample is slightly wetted before being rolled.



Fig. 1.1

Complete the key below that is used to identify the main soil types with this test.

- |   |         |
|---|---------|
| 1. Sample forms a ball in the hand        | go to 2 |
| Sample falls apart                        | .....   |
| 2. Ball can be rolled into a thin sausage | go to 3 |
| Ball crumbles when rolled                 | loam    |
| 3. Sausage feels smooth and silky         | silt    |
| Sausage feels sticky and stiff            | .....   |

[2]

- (b) Fig. 1.2 shows a laboratory method for finding the amount of organic matter in a dried soil sample.

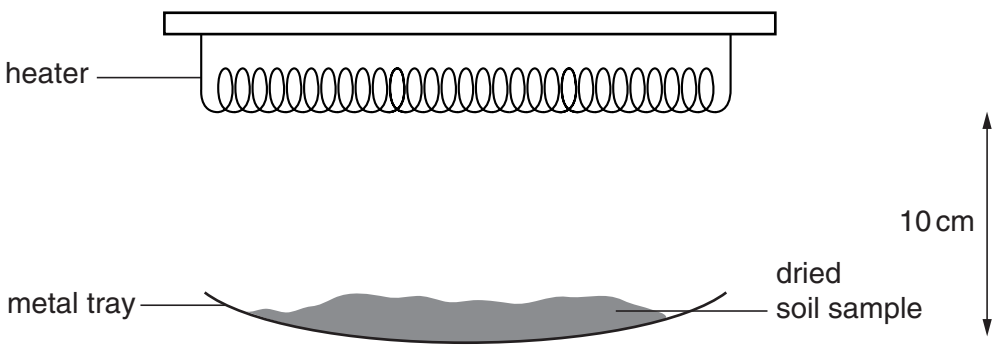


Fig. 1.2

(i) Why was it necessary to dry the soil sample?

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

(ii) What is given off when the soil sample is heated?

.....[1]

The dried soil sample weighed 20 g. After heating, it weighed 16 g.

(iii) How much organic matter did this sample contain? .....[1]

(iv) What was the percentage of organic matter in the sample?  
.....[1]

(c) Three plots, **A**, **B** and **C** were tested for pH and NPK levels.  
Five soil samples were taken from each plot and mixed together before testing.  
Table 1.1 shows the results.

**Table 1.1**

	pH	nitrogen (N)	phosphate (P)	potash (K)
plot <b>A</b>	7.0	high	low	high
plot <b>B</b>	5.0	high	high	high
plot <b>C</b>	6.5	low	low	low

(i) Which plot needs a general compound NPK fertiliser? .....[1]

(ii) Which plot would benefit from the addition of lime? .....[1]

(iii) State why five samples were taken from each plot and mixed before testing.  
.....  
.....[1]

(d) Explain why seeds germinate better in a soil that has a good crumb structure.  
.....  
.....  
.....[2]

2 (a) Complete the requirements for a **named** crop.

crop .....

(i) soil type .....

(ii) soil pH .....

(iii) climate .....

[3]

(b) Fig. 2.1 shows the plan of a garden plot on a hillside. Maize, field beans and sweet potatoes are grown on the plot in rotation.

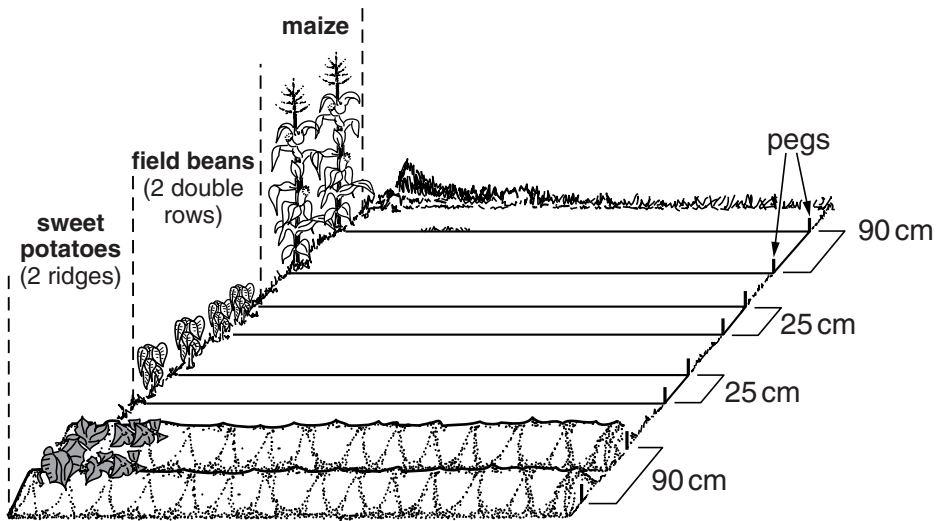


Fig. 2.1

(i) List three differences between the flowers of the maize and field beans.

1. ....
2. ....
3. ....[3]

(ii) State two advantages of rotating these crops.

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

(iii) How would the farmer produce 'organic' crops in this plot?

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

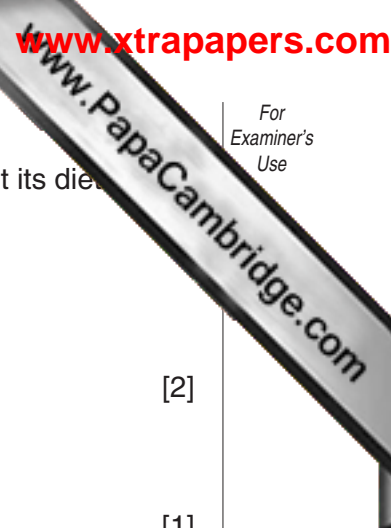
(iv) Explain why the rows of crops are planted across the slope of the land.

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

(v) Describe how sweet potato tubers are formed.

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

[Total : 13]



3 (a) Select a farm animal (**not** poultry) and answer the questions below about its diet.  
animal .....

(i) Name two foods that make up this animal's ration.  
..... and ..... [2]

(ii) What else is needed to complete the animal's diet?  
.....[1]

(iii) State how the ration provided should be different if the animal were pregnant or producing milk.  
.....  
.....[1]

(iv) Suggest two ways by which you could prevent animals wasting their food.  
1. ....  
.....  
2. ....  
.....[2]

(b) Explain the meaning of a *balanced ration*.  
.....  
.....  
.....[2]

(c) Fig 3.1 shows the digestive system of a pig.

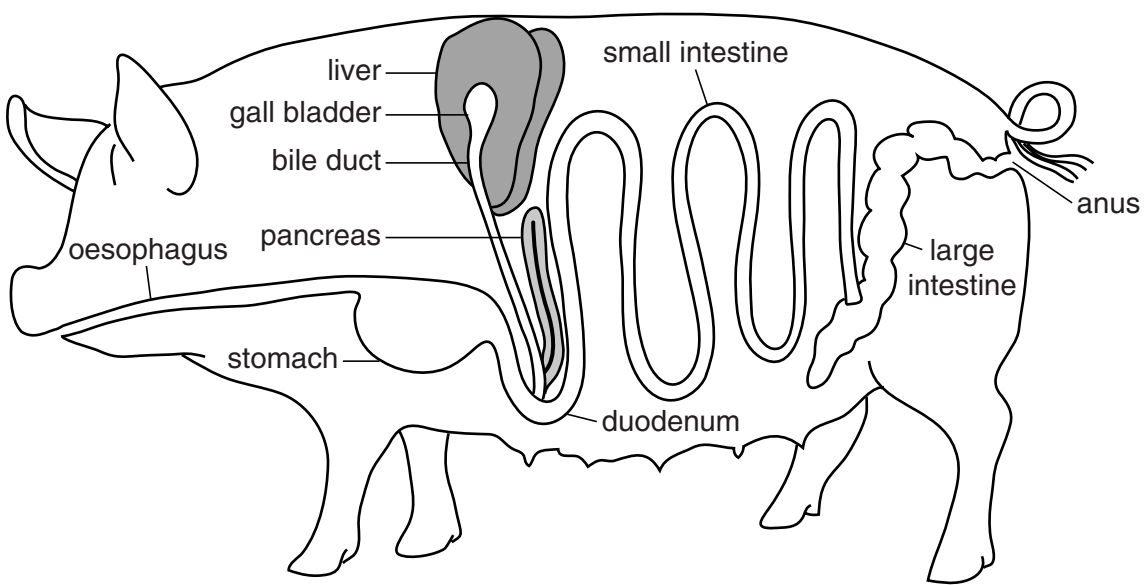


Fig. 3.1

- (i) Name the part where both digested food and water are absorbed.  
 .....[1]
- (ii) Name the organ in which the contents are most acidic.  
 .....[1]
- (iii) State the function of bile.  
 .....  
 .....[1]
- (iv) Describe how the digestive system of a ruminant differs from that of a pig.  
 .....  
 .....  
 .....  
 .....  
 .....  
 .....[3]

[Total : 14]

4 (a) Fig. 4.1 shows an insect that feeds on plants.

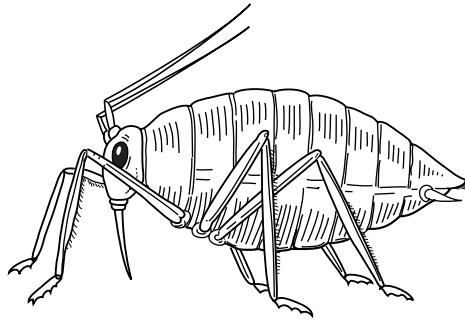


Fig. 4.1

(i) Describe how this insect feeds.

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

(ii) Suggest why these insects usually feed near the growing points of plants rather than lower down the stem.

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

(iii) State two ways in which these insects harm plants.

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



(b) Table 4.1 gives details of three chemical insecticides, **A, B and C**.

**Table 4.1**

insecticide	method of application	mode of action
<b>A</b>	spray	kills insects on contact
<b>B</b>	bait	kills insects when eaten
<b>C</b>	vapour	repels insects

(i) For **two** of these insecticides suggest a disadvantage that could result from their use.

*insecticide* .....

*disadvantage* .....

.....

*insecticide* .....

*disadvantage* .....

.....[2]

(ii) List **three** precautions that should be taken by the operator when spraying an insecticide.

.....

.....

.....[3]

(iii) State two reasons for using biological control rather than the methods in Table 4.1.

1. ....

.....

2. ....

.....[2]

[Total : 11]

5 (a) Fig. 5.1 shows two livestock houses.

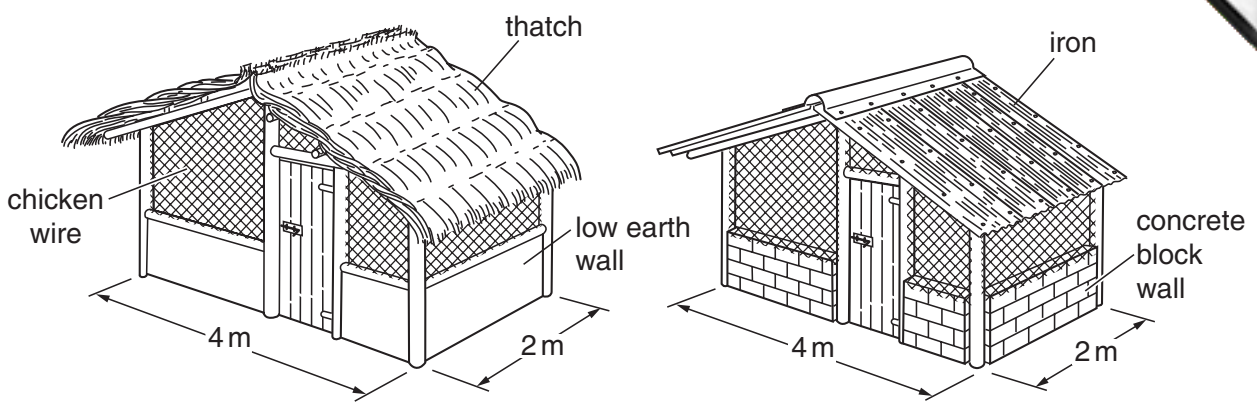


Fig. 5.1

State **one** advantage of

(i) the thatched roof;

.....[1]

(ii) the iron roof.

.....[1]

(iii) State two reasons for constructing an over-hanging roof on a livestock house.

1. ....

.....

2. ....

.....[2]

(iv) Which material, earth or concrete blocks, would be more suitable for the wall of a chicken house?

.....

Give a reason for your answer.

.....

.....[1]

Table 5.1 gives the recommended stocking rates for hens, broilers and rabbits houses.

**Table 5.1**

animals	stocking rates
laying hens	4 birds/m <sup>2</sup>
broilers	6 birds/m <sup>2</sup>
rabbits	2 animals/m <sup>2</sup>

(v) Use the information in Fig. 5.1 and Table 5.1 to calculate the carrying capacity for broilers in **one** of the livestock houses shown in Fig. 5.1.

..... [1]

(vi) Suggest what might happen if this carrying capacity was exceeded.

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

(b) Suggest a reason why there are many more chicken farms world wide than rabbit farms.

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

(c) Describe how to make concrete blocks.

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

[Total : 11]

6 (a) Fig. 6.1 shows the water cycle. Fill in the missing labels, 1 to 4.

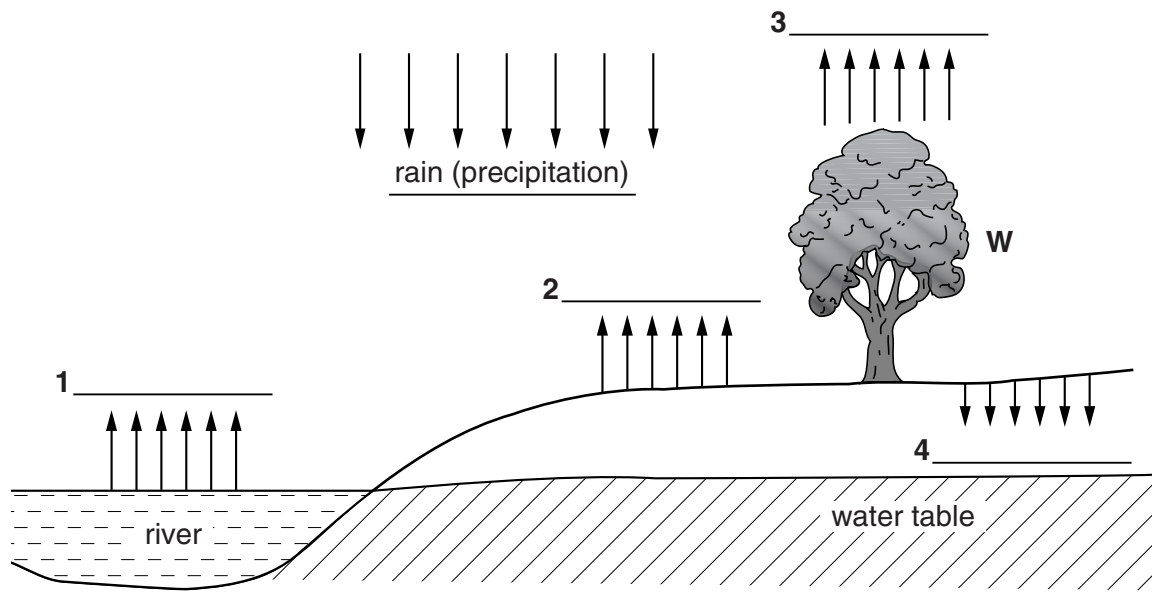


Fig. 6.1

[3]

(b) Fig. 6.2 shows a leaf from the tree, W.

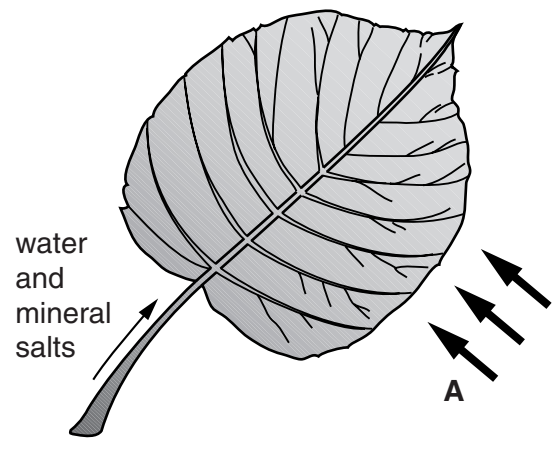


Fig. 6.2

(i) Name the gas **A** used by the leaf in photosynthesis.....[1]

(ii) Explain how water and minerals get to the leaf from the soil. Include the processes involved and the route taken.

.....

.....

.....

.....

.....

(c) Fig. 6.3 shows a water pump that can be used to raise the water from the water. Fig. 6.4 shows a sectional view of the lower part of the pump.

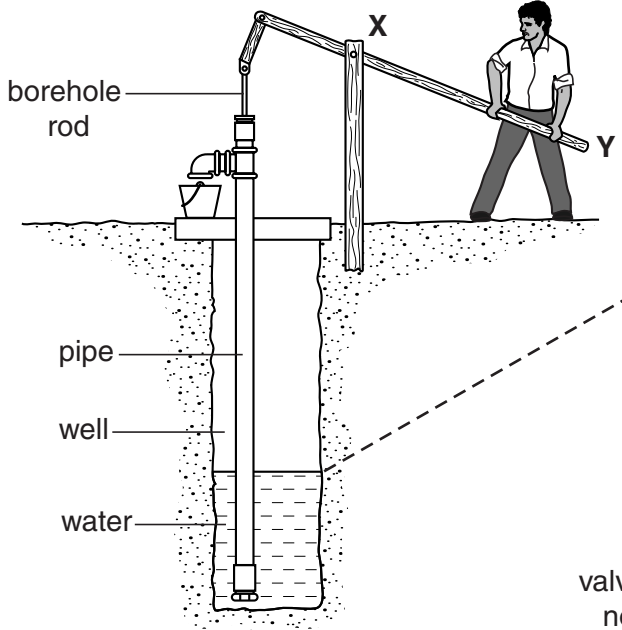


Fig. 6.3

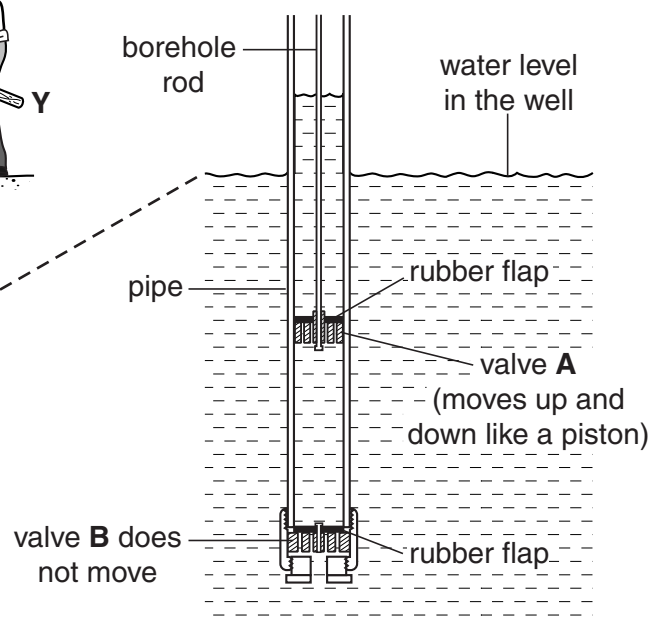


Fig. 6.4

(i) State why the pump arm, X–Y, needs to be long.

.....

.....[1]

(ii) As the borehole rod is moved up and down, valves A and B open and close. Explain how this raises the water in the pump.

.....

.....

.....

.....[2]

[Total : 10]



15  
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*Copyright Acknowledgements:*

- Question 1. Ian Elliot, *Practical Course for Botswana*. Published by Longman.
- Question 2. Elliot, Stout and Dejardin, *Agriculture for Southern Africa*. Published by Bell and Hyman.
- Question 4. Ian Elliot, *Practical Course for Botswana*. Published by Longman
- Question 5. Elliot, Stout and Dejardin, *Agriculture for Southern Africa*. Published by Bell and Hyman.
- Question 6. Elliot, Stout and Dejardin, *Agriculture for Southern Africa*. Published by Bell and Hyman.

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