UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

4492945894

AGRICULTURE **0600/03**

Paper 3 **October/November 2010**

1 hour 15 minutes

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.
You may use a soft pencil for any diagrams, graphs or rough working.
Do not use staples, paper clips, highlighters, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.

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	
1	
2	
3	
4	
5	
6	
7	
8	
9	
Total	

This document consists of **16** printed pages.

UNIVERSITY of CAMBRIDGE International Examinations

1 **(a)** Fig. 1.1 shows a Zebu cow from Africa.

For Examiner's Use

Fig. 1.1

Suggest **two** features that this breed of cattle might have which help to make it successful in Africa.

1 .....

.....

2 .....

..... [2]

For Examiner's Use

Fig. 1.2

(b) Fig. 1.2 is a picture of a South Devon bull. This breed is used in England for meat and milk production.

(i) Suggest **two** possible features of this breed that might make it ideal for crossing with Zebu cattle.

1 .....

.....

2 .....

..... [2]

(ii) Describe briefly how a breeding programme could be used to introduce one of the features described above.

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..... [3]

(c) When breeding cattle, artificial insemination (AI) is often used. Explain the process of AI.

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..... [3]

[Total: 10]

2 **(a)** Fig. 2.1 and Fig. 2.2 show implements used to cultivate soil to prepare a seed bed.

For Examiner's Use

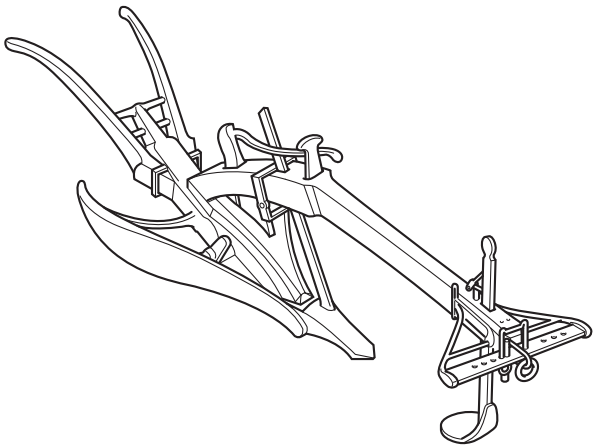

Fig. 2.1

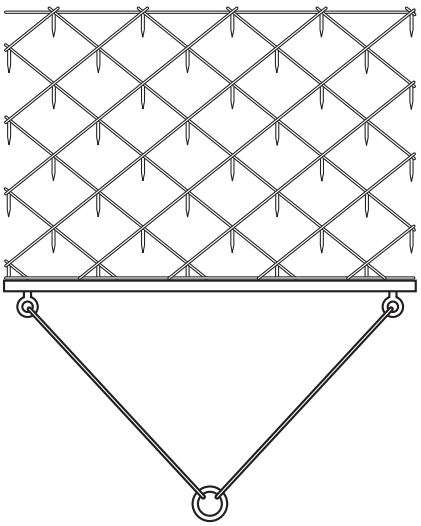

Fig. 2.2

(i) Name another implement or tool that could be used to do the job of the implement in Fig. 2.2.

..... [1]

(ii) Describe and explain how the implements in Fig. 2.1 and Fig. 2.2 could be used to prepare a seed bed for planting a root crop.

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..... [3]

For Examiner's Use

(b) (i) Name an **inorganic** fertiliser that could provide a field crop with a supply of nitrogen.

..... [1]

(ii) Suggest **two** advantages of using inorganic fertilisers compared with organic fertilisers.

1 .....

.....

2 .....

..... [2]

(iii) Explain how regular use of inorganic fertiliser might affect the structure of the soil.

.....

.....

..... [2]

(iv) Why might cultivating land by minimum tillage conserve soil water?

.....

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..... [2]

[Total: 11]

3 Fig. 3.1 shows a plant.

For Examiner's Use

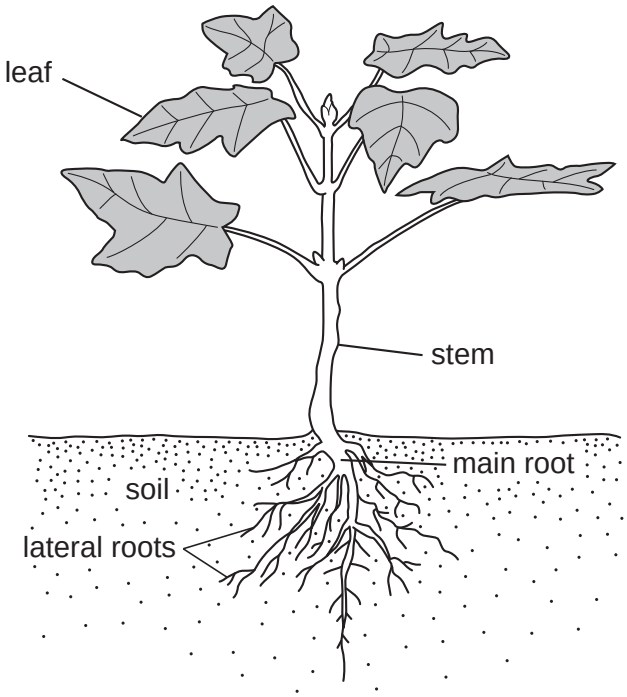

Fig. 3.1

(a) Water enters the lateral roots by osmosis. Describe how the water gets to the leaves.

.....

.....

..... [2]

(b) Name the main product of photosynthesis.

Explain how this product is transported away from the leaves and suggest plant structures where it could be stored.

.....

.....

.....

.....

..... [4]

(c) In dry conditions plants often wilt.

Explain how this might help a plant survive a period of drought.

.....

.....

..... [2]

[Total: 8]

For Examiner's Use

4 **(a)** Fig. 4.1 shows a man dressed to spray a crop.

Fig. 4.1

Complete the table below using examples that are seen in Fig. 4.1.

type of protection	reason for use
respirator	to prevent harmful chemicals entering lungs

[2]

(b) Name a type of herbicide that could be used to treat persistent, deep-rooted weeds.

..... [1]

Describe the steps that must be taken to prepare and apply the herbicide to the crop safely, other than using protective clothing.

.....

.....

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.....

.....

..... [3]

(c) Weeds can also be controlled by cultivation. Describe how you would use cultivation techniques to control the following types of weed.

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Annual weed .....

.....

.....

Perennial deep-rooted weed .....

.....

.....

..... [4]

[Total: 10]

5 **(a)** Explain the use of an antiseptic and the use of an antibiotic.

.....

.....

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.....

..... [2]

(b) Name a notifiable disease of animals.

..... [1]

(c) Describe the role of your local veterinary service in the prevention of livestock diseases.

.....

.....

..... [2]

[Total: 5]

6 Fig. 6.1 shows a building used to store food crops.

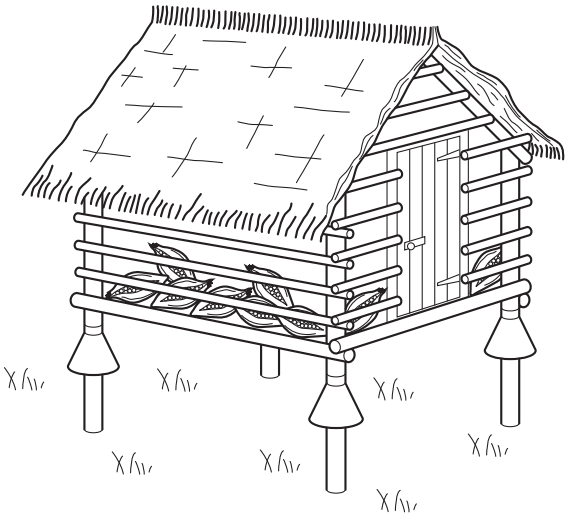

Fig. 6.1

(a) Give **three** features of the building that make it suitable for the storage of crops.

1.....

2.....

3..... [3]

For Examiner's Use

(b) A group of farmers wanted to build a new crop store for use by the farmers.

(i) Name **two** important considerations when choosing a possible site for the store.

1 .....

2 ..... [2]

(ii) Why might it be less expensive for farmers to build a communal crop store?

.....

.....

..... [2]

(iii) Table 6.1 below shows some of the advantages and disadvantages of different materials that could be used in the construction of the new store.

Complete the table using advantages and disadvantages other than cost.

Table 6.1

material	job/use	advantage of use	disadvantage of use
wood	walls		termite attack / rots
concrete	raised flooring	avoids flooding	
corrugated sheeting	roofing		not readily available
palm leaves	roofing / walls		short life

[2]

(iv) What are the advantages of storing crops for several months?

.....

.....

..... [2]

[Total: 11]

For Examiner's Use

7 **(a)** Table 7.1 gives some data on sheep behaviour.

This data was collected by observing 20 sheep every hour, on the hour, during one summer day.

Their activity at the time of observation was recorded under four headings.

Table 7.1

time of day / hrs	activity			
	grazing	chewing the cud	lying down	other activity e.g. rubbing/fighting
0700	18			2
0800	16	1		3
0900	12	5	2	1
1000	1	17		2
1100		16	3	1
1200		5	13	2
1300		1	19	
1400	3		16	1
1500	15		2	3
1600	18			2

(i) State **two** conclusions about the behaviour of sheep that can be made from this table.

1 .....

.....

2 .....

..... [2]

(ii) State **two** reasons why stockmen need to make regular observations of their stock's behaviour.

.....

.....

..... [2]

(b) Fig. 7.1 shows a ruminant's digestive system.

For Examiner's Use

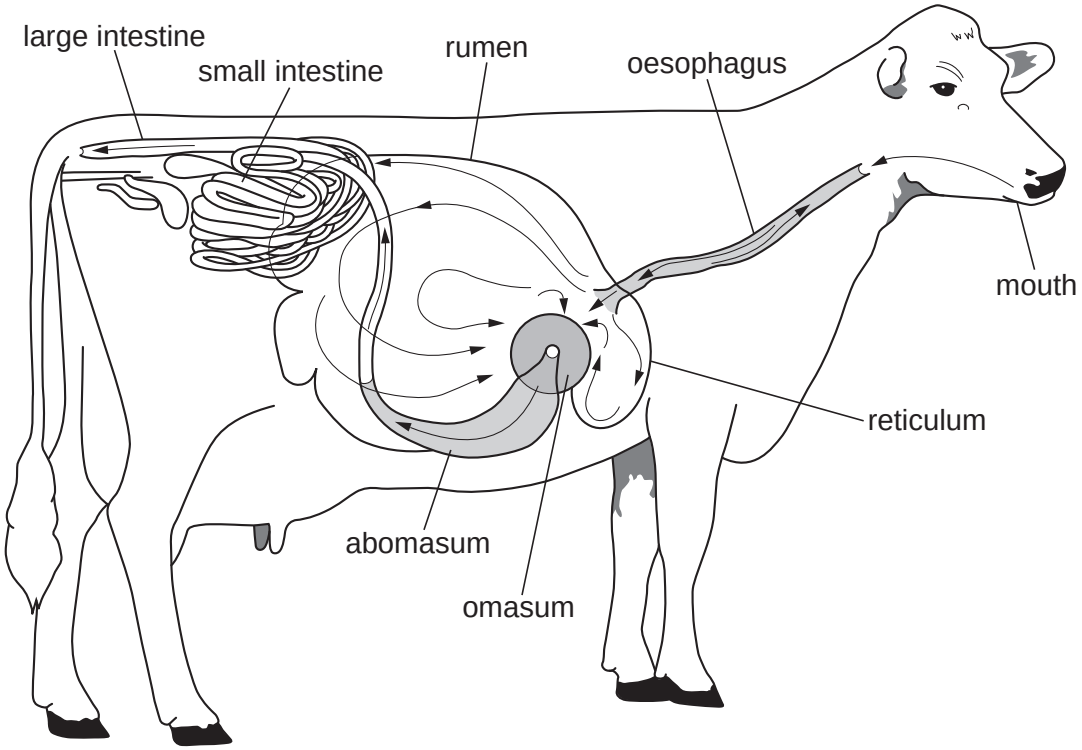

Fig. 7.1

Use Fig. 7.1 above to describe the passage of grass through the digestive system, from the mouth to the small intestine, explaining the role of micro-organisms in the process.

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..... [4]

[Total: 8]

8 Fig. 8.1 shows a pH test using a probe. The soil sample being tested is from a pasture.

For Examiner's Use

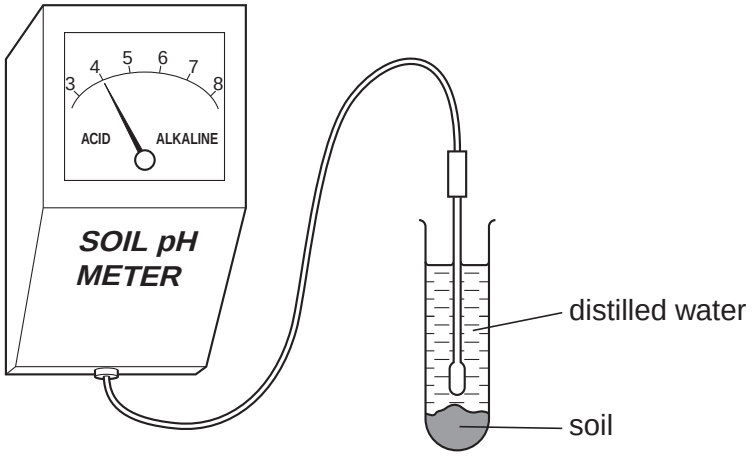

Fig. 8.1

The meter is showing the needle pointing at 4.0.

(a) What colour would **soil indicator** give if added to the test tube?

..... [1]

(b) State **two** ways in which this pasture would benefit from liming.

1 .....

.....

2 .....

..... [2]

(c) What effect could lime have on the soil?

.....

.....

..... [2]

(d) Another pasture had a soil pH of 7.5. A crop of hay was taken from the pasture for three years. During this time the pasture was heavily grazed by cattle.

What might happen to the pH of the soil? Give a reason.

.....

.....

..... [2]

[Total: 7]

9 Fig. 9.1 shows a shallow dam.

For Examiner's Use

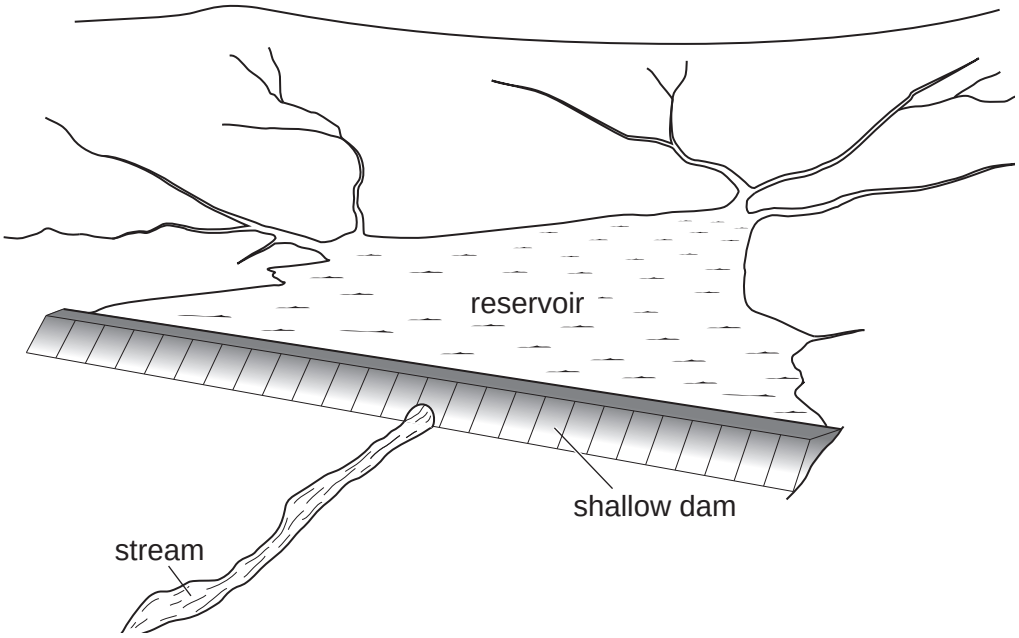

Fig. 9.1

(a) Water can be stored by constructing dams.

(i) State an advantage of building such a dam.

.....

..... [1]

(ii) State a problem that may arise from the use of shallow dams.

.....

..... [1]

(iii) Explain how the water catchment area needs to be considered when constructing such a dam.

.....

..... [1]

(iv) Explain how building such a dam might affect the local environment below the dam site.

.....

.....

.....

..... [2]

(v) Explain why the front wall of the dam is built with a sloping wall.

For Examiner's Use

.....

.....

..... [2]

(b) Describe how water collected from a shallow dam could be treated and stored for livestock and human use.

.....

.....

.....

.....

..... [3]

[Total: 10]