UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER			

6781280201

AGRICULTURE **0600/02**

Paper 2 **October/November 2009**

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 or graphs.
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 **17** printed pages and **3** blank pages.

UNIVERSITY of CAMBRIDGE International Examinations

For Examiner's Use

1 **(a)** Trees provide man with timber.
State a use for timber on the farm.

.....

[1]

(b) Trees provide food for farm animals, such as goats.
Suggest **one** other thing that trees provide for farm animals.

.....

[1]

(c) Name a cereal crop used by man for food.

.....

[1]

(d) Livestock are used by man.
Place ticks (✓) in Table 1.1 to indicate the main use or uses of the listed animals.
Use only **six** ticks.

Table 1.1

animal	meat	milk	skins	transport
donkey				
rabbit				
goat				

[3]

(e) Farm products can be used in three ways:
1 for use locally;
2 for sale in nearby markets;
3 for export.

(i) State **one** advantage of exporting goods.

.....

.....

[1]

(ii) State **one** disadvantage of exporting goods.

.....

.....

[1]

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(f) As more countries become industrialised there is more need for fuel.
Coal and oil, which are used for fuel, are running out.

Crops can be grown and used for fuel rather than food.
Fig. 1.1 is a bar chart that shows the benefits of growing crops for fuel in different parts of the world.

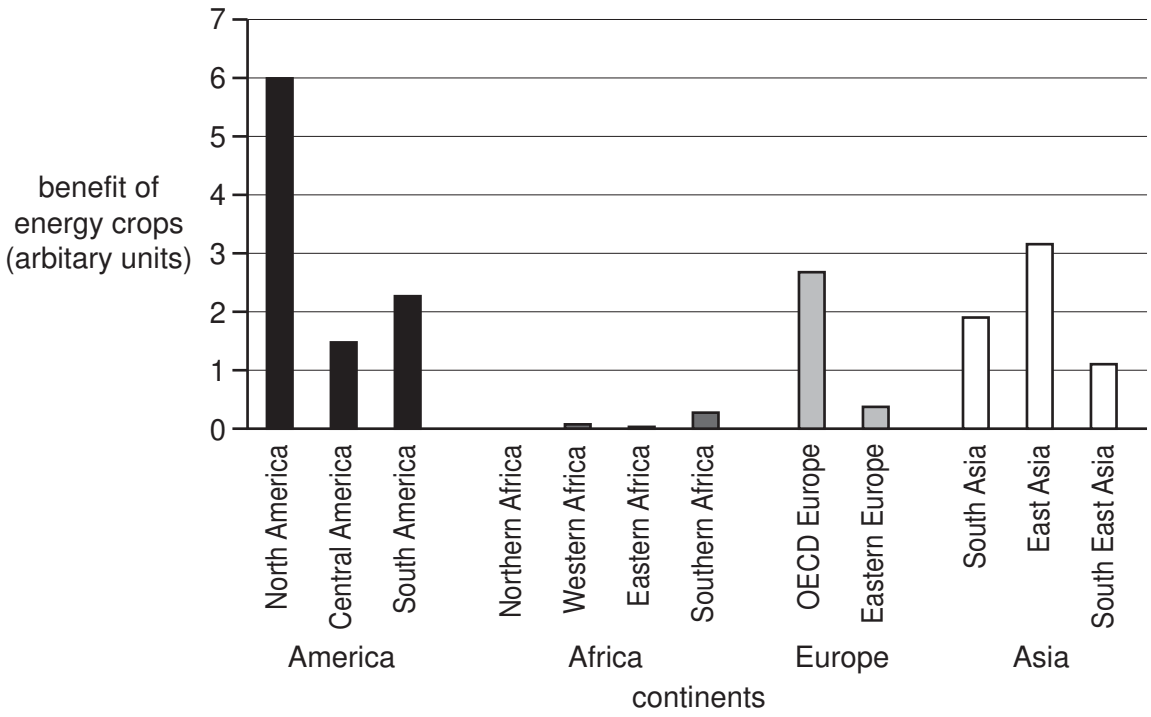

Fig. 1.1

(i) List the continents in the order in which they benefit from growing 'fuel' crops.
Use the information in the bar chart.

most benefit .....

.....

.....

least benefit ..... [2]

(ii) Suggest a reason to explain why so little benefit is possible in the continent you placed at the bottom of the list.

.....

..... [1]

[Total 11]

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2 **(a)** Fig. 2.1 shows a soil profile.

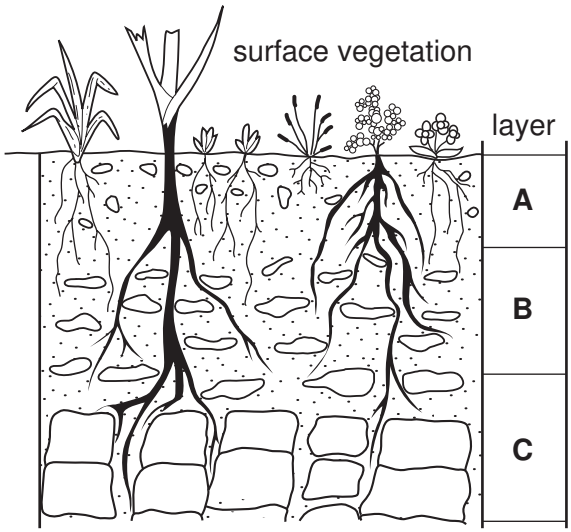

Fig. 2.1

(i) Name layer **C**.

.....

(ii) In which layer would most living organisms be found?

..... [2]

(b) Complete Table 2.1 that compares the particle size of different soil types.

Table 2.1

Name of soil particle	Particle size (mm)
gravel	over 2.0
	2.0 - 0.02
silt	
clay	less than 0.002

[2]

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(c) Fig 2.2 shows pie charts that represent the composition of four soils, **A**, **B**, **C** and **D**.

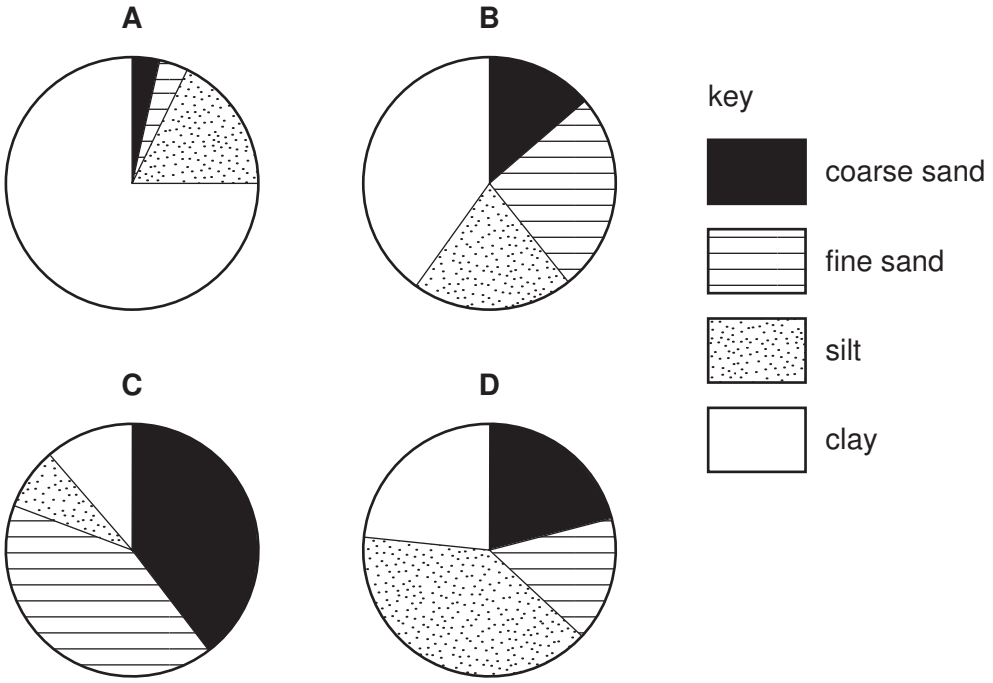

Fig. 2.2

Which soil would **not** drain well? .....

Give a reason for your answer. .....

..... [2]

(d) (i) Describe a pipe drain.

.....

.....

.....

..... [2]

(ii) Suggest why pipe drains are used rather than ditches to drain grazing land.

.....

..... [1]

[Total: 9]

3 **(a)** Many food crops are now sold as 'organic'.

State how food crops qualify to be classed as organic.

.....

..... [2]

(b) Fertilisers provide cereals with nutrients.

State **two** disadvantages of using organic fertilisers, such as FYM (Kraal manure).

1 .....

.....

2 .....

..... [2]

(c) Fig. 3.1 shows a bag of inorganic fertiliser.

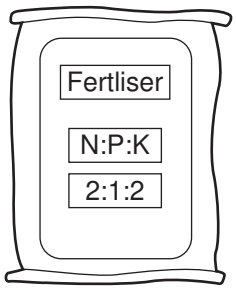

Fig. 3.1

(i) What does **K** stand for?

.....

(ii) Why is **K** needed by cereal crops?

.....

..... [2]

(d) Cereals are often grown in rotation with legumes such as cow peas and ground nuts.

Describe what is meant by *rotation*.

.....

.....

..... [2]

(e) Fig. 3.2 shows the nitrogen cycle.

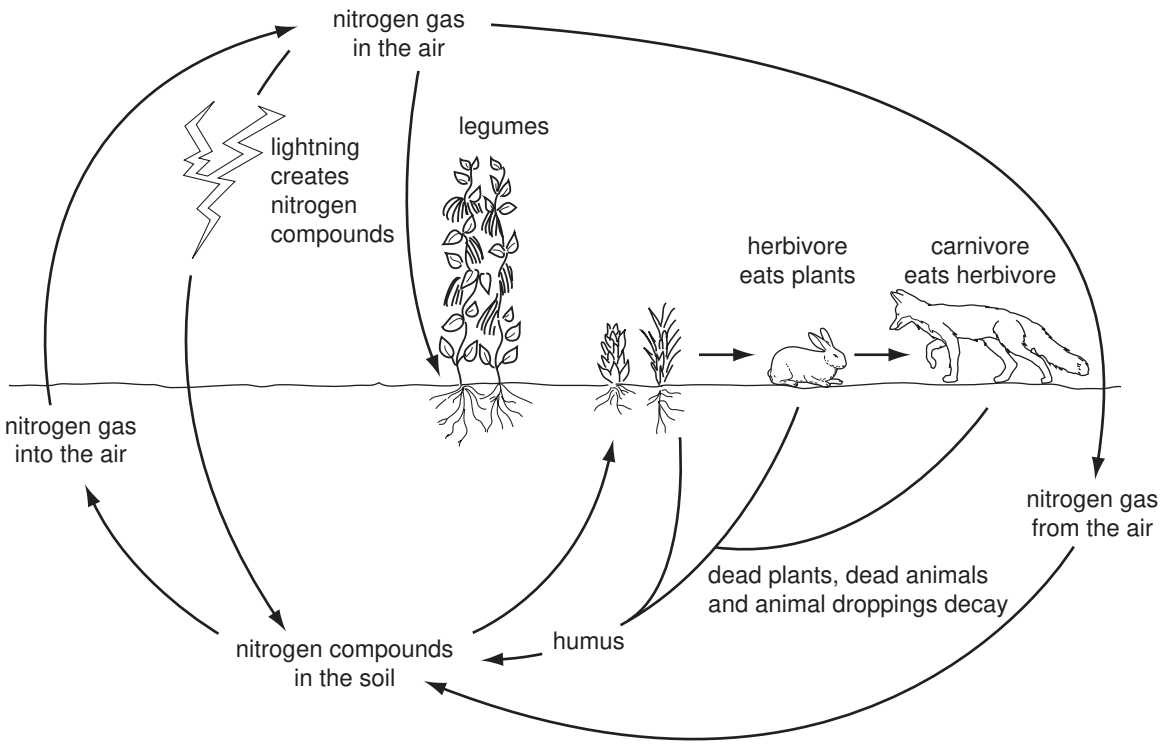

Fig. 3.2

Nitrogen fixation takes place at several places in the cycle.

Write the letter **F** in **two** places on Fig. 3.2 to show where nitrogen fixation occurs. [2]

[Total: 10]

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4 **(a)** State **two** effects wind can have on a growing cereal crop.

1 .....

2 ..... [2]

(b) Plants can be grown in enclosed conditions.
This creates high humidity around the seedlings.

Fig. 4.1 shows seedlings being grown in a glass cloche.

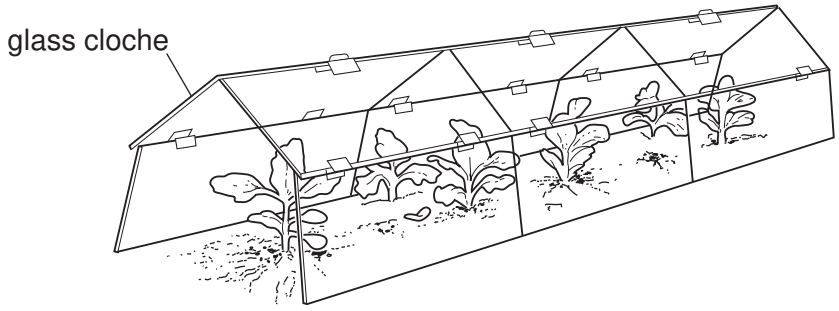

Fig. 4.1

State **two** possible effects that the high humidity has on the seedlings.

1 .....

.....

2 .....

..... [2]

(c) Fig. 4.2 shows the pathway taken by water through a plant.

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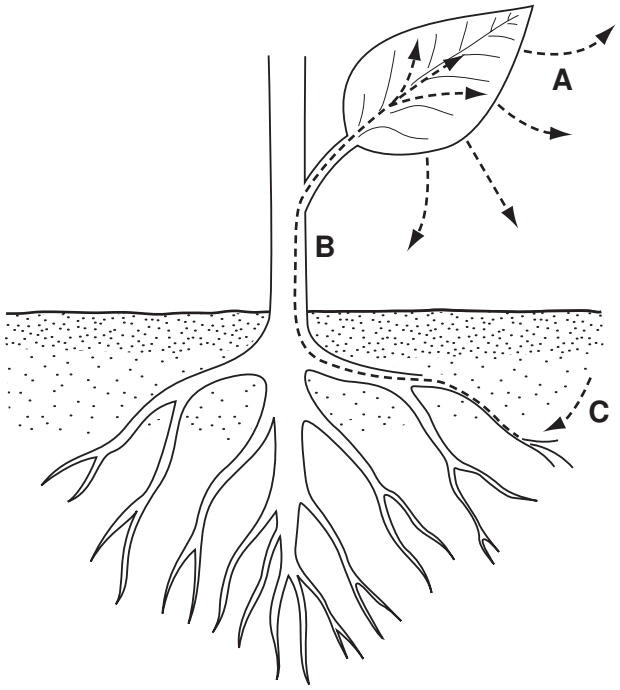

Fig. 4.2

(i) What name is given to the process taking place at **A**?

.....[1]

(ii) Name the structure inside the stem, **B**, in which water travels.

.....[1]

Water is entering the plant at **C** by osmosis.

(iii) Define *osmosis*.

.....

.....

.....[2]

[Total: 8]

5 Pests can be controlled by using chemicals.
Fig. 5.1 shows the protective clothes worn when using pesticides.

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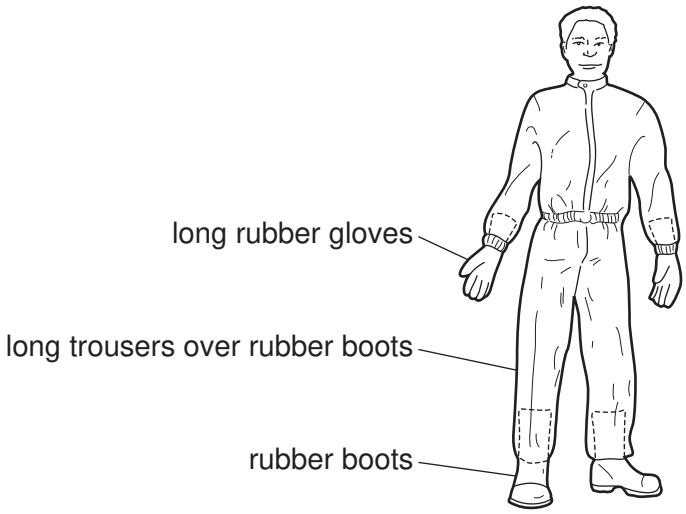
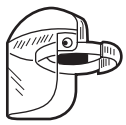


Fig. 5.1

(a) Which **two** other items shown below, should be worn when mixing very toxic fluids?
Tick (✓) the items you have chosen.


face shield


waterproof hat


goggles


respirator

[2]

Fig. 5.2

(b) State **two** precautions, other than wearing protective clothing, which should be taken when **spraying** pesticides.

1 .....

.....

2 .....

..... [2]

(c) Explain how pollution could occur during the cleaning of spraying equipment.

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.....

.....

..... [2]

(d) Describe the biological control of a **named** pest.

.....

.....

..... [2]

[Total: 8]

For Examiner's Use

6 **(a)** Fig. 6.1 shows the reproductive system of a male ruminant.
Fig. 6.2 shows the cross section of a bean flower.

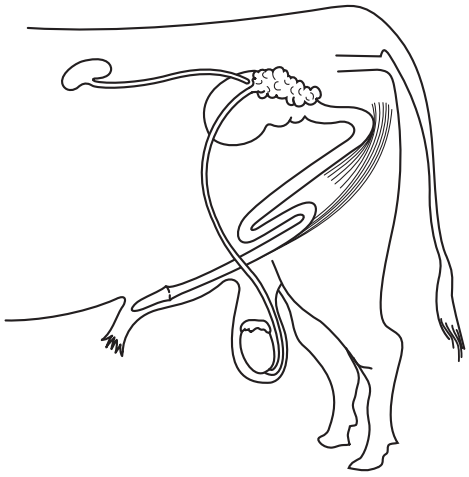

Fig. 6.1

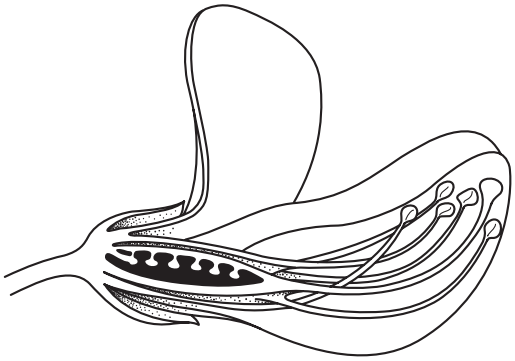

Fig. 6.2

Using label lines, identify with:

(i) the letter **P** the penis in Fig. 6.1;

(ii) the letter **G** on Fig. 6.1 **and** Fig. 6.2 to show where male gametes are made;

(iii) the letter **F** on Fig. 6.2 to show where fertilisation takes place in the bean. [4]

(b) Male farm animals can be castrated by having their testicles removed.

Suggest **two** effects this might have on the animal.

1 .....

2 ..... [2]

(c) Define *lactation*.

.....

..... [1]

(d) Give **two** reasons why colostrum is important to the young animal.

.....

.....

..... [2]

[Total: 9]

7 **(a)** Fig. 7.1 shows a broiler chicken and a broiler chick.

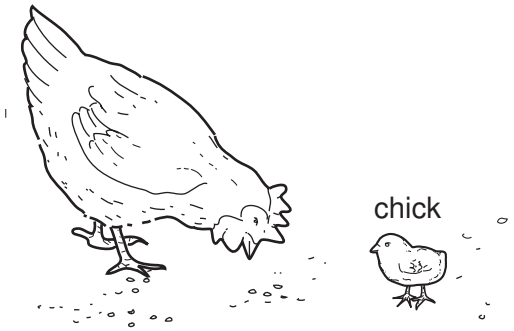

Fig. 7.1

Broilers take 52 days to grow ready for market.
This rapid growth will not be achieved if the chicks become ill.

(i) Give **two** signs which indicate that a chick is ill.

1 .....

2 ..... [2]

(ii) State what action should be taken by the farmer if a chick becomes ill.

..... [1]

(b) Rapid growth in broilers will be prevented if the chicks are not fed correctly.

Complete Table 7.1 that lists the constituents of a balanced diet and their role in the animal.

Table 7.1

Food constituent	Role in the animal
	growth and development
carbohydrate	
fat (lipids)	cell membranes and a reserve of energy
mineral salts	growth and development
	needed in very small amounts for health and condition
fibre	ease of digestion

[3]

[Turn over

(c) Would the ration required by the growing chick be classed as a maintenance diet or a production diet?

Give a reason for your answer.

.....

..... [1]

(d) Rapid growth in broilers will only be achieved if the breeding of the chicks is correct. Breeding in chicks is controlled by genes.

(i) What is a *gene*?

.....

..... [1]

A broiler that gets a dominant growth gene **M**, from each of its parents, will grow faster than a broiler that only has the recessive **m** genes.

(ii) Complete the following genetic diagram.

	cockerel	×	hen
genes	**MM**		**Mm**
possible chick genes	.....		.....

[1]

(e) A breeding programme to improve growth rates by artificial selection is to be set up.

Explain why selecting a cockerel with the genes **Mm** to mate with a hen with genes **Mm** would not be a suitable cross.

.....

.....

.....

.....

..... [2]

[Total 11]

8 **(a)** Fig. 8.1 shows two livestock buildings A and B.

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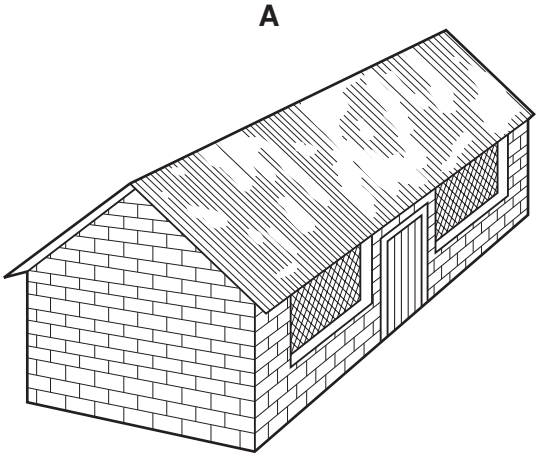
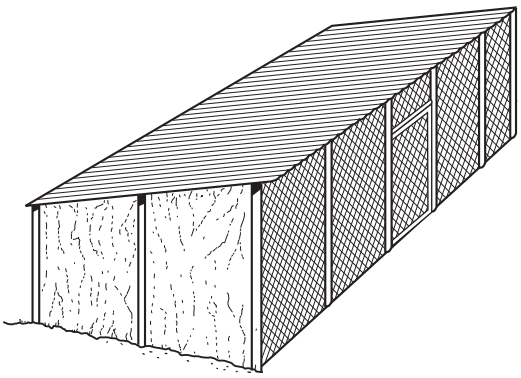
A



corrugated iron roof
brick and cement walls
wire netting windows

B



corrugated iron roof
pole and wire netting walls
with sacking at ends
2 m high at front
1.6 m high at back

Fig. 8.1

(i) Draw a roof truss suitable for building **A**.

[1]

(ii) Give **two** reasons why the corner posts in building **B** should be set in concrete.

1 .....

2 ..... [2]

(iii) Suggest why building **B** provides better ventilation for the livestock.

.....

..... [1]

(iv) Suggest why building **A** provides more protection from predators.

.....

..... [1]

(b) Describe how to provide a livestock building with a constant water supply from a nearby stream.

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.....

.....

.....

.....

..... [3]

[Total: 8]

For Examiner's Use

9 **(a)** Name a **local** grass planted in grazing pasture.

.....

[1]

(b) Table 9.1 compares the characteristics of various pasture grasses.

Table 9.1

	Grass characteristics				
Grass type	**Growth rate**	**Digestibility**	**Yield**	**Soil preference**	**Other features**
A	fast	very good	very high	loam	coarse leaves
B	slow	good	fair	heavy	tall stems
C	slow	fair, fibrous	high	sandy	deep roots
D	fast	very good	high	moist	fine leaves

(i) Which grass produces the highest digestibility and the highest yield?

.....

[1]

(ii) Which grass would survive overgrazing best?
Give a reason for your choice.

.....

.....

[1]

(iii) Which grass would be suited for rotational grazing?
Give a reason for your choice.

.....

.....

[1]

(iv) Which grass would **not** benefit from the addition of lime?
Give a reason for your choice.

.....

.....

[1]

(c) What is meant by *carrying capacity*?

.....

.....

[1]

[Total: 6]

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