

Candidate Forename		Candidate Surname	
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Centre Number						Candidate Number				
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**OXFORD CAMBRIDGE AND RSA EXAMINATIONS
GENERAL CERTIFICATE OF SECONDARY EDUCATION**

A334/01

**TWENTY FIRST CENTURY SCIENCE
ADDITIONAL APPLIED SCIENCE A**

Agriculture and Food (Foundation Tier)

MONDAY 25 JANUARY 2010: Afternoon

DURATION: 45 minutes

SUITABLE FOR VISUALLY IMPAIRED CANDIDATES

Candidates answer on the Question Paper

A calculator may be used for this paper

OCR SUPPLIED MATERIALS:

None

OTHER MATERIALS REQUIRED:

Pencil

Ruler (cm/mm)

READ INSTRUCTIONS OVERLEAF

INSTRUCTIONS TO CANDIDATES

- **Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes on the first page.**
- **Use black ink. Pencil may be used for graphs and diagrams only.**
- **Read each question carefully and make sure that you know what you have to do before starting your answer.**
- **Answer ALL the questions.**
- **Write your answer to each question in the space provided, however additional paper may be used if necessary.**

INFORMATION FOR CANDIDATES

- **The number of marks is given in brackets [] at the end of each question or part question.**
- **The total number of marks for this paper is 36.**

Answer ALL the questions.

1 Jo keeps a flock of sheep.

(a) Complete the sentences about sheep.

Use words from the list.

COTTON

GATHERED

NYLON

RECYCLED

WHOLE ORGANISM

WOOL

Sheep produce a textile material called

_____ .

This harvest is called a _____
harvest.

[2]

(b) Sheep breed only at certain times in the year.

Look at the stages about sexual reproduction in sheep.

The stages are in the wrong order.

A fertilisation

B birth

C development of the embryo

D formation of eggs and sperm

E growth and development of the lamb

Using the letters A, B, C, D and E, put the stages in the correct order.

The last one has been done for you.

				E
--	--	--	--	----------

[3]

(c) Female sheep are called ewes and male sheep are called rams.

Artificial insemination can be used with sheep.

Describe the process of ARTIFICIAL INSEMINATION.

[3]

[Total: 8]

2 Sugar cane and sugar beet are plants that produce a lot of sugar.

(a) Complete the sentences to explain how they produce sugar.

Use words from this list.

LIGHT

OSMOSIS

OXYGEN

PHOTOSYNTHESIS

RESPIRATION

Sugar cane and sugar beet produce sugar by

_____ .

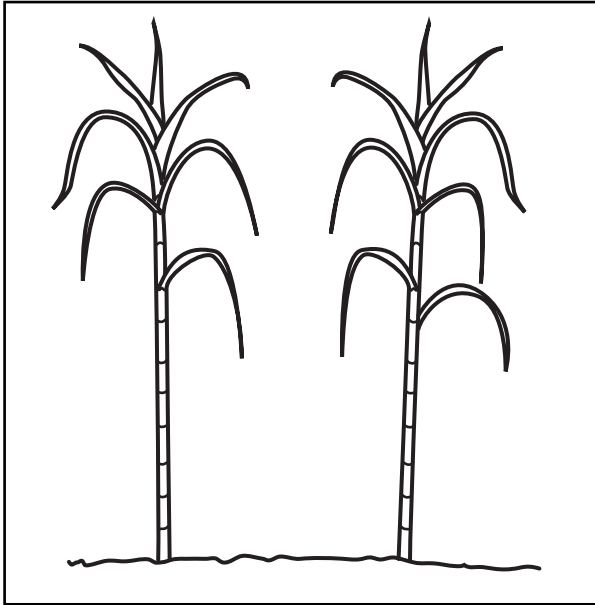
The process needs water, minerals, carbon dioxide

and _____ .

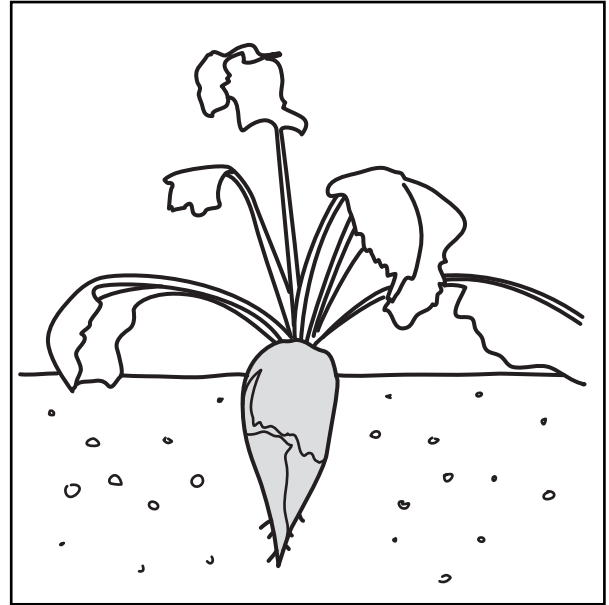
[2]

(b) Look at the information on sugar cane and sugar beet.

SUGAR CANE



SUGAR BEET



NOT TO SCALE

large grass-like plants

looks like large carrots

long, thin leaves

short, wide leaves

sugar is stored in the stems

sugar is stored in the roots

can be harvested every year

takes two years to crop

crop is 10 tonnes of sugar per hectare

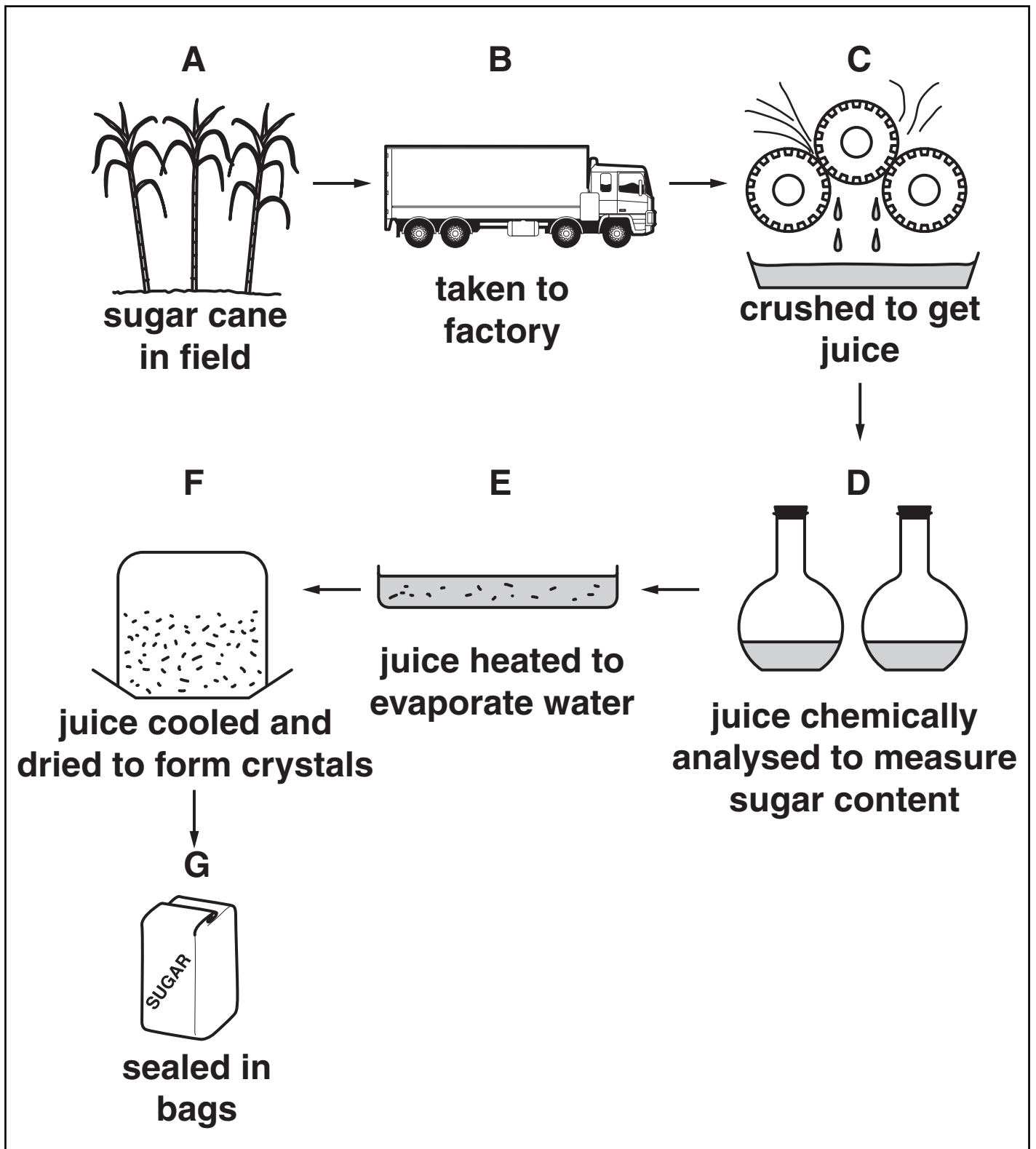
crop is 7 tonnes of sugar per hectare

Using ONLY this information write down two advantages of growing sugar cane.

1 _____

2 _____

(c) Look at the stages in sugar production from sugar cane.



- (i) Write down a stage, A, B, C, D, E, F or G, which shows the crop

growing _____

being processed _____

[2]

- (ii) What type of test is used in stage D?

Put a tick (✓) in the box next to the correct answer.

qualitative

semi-quantitative

quantitative

[1]

- (iii) In stage G the sugar is SEALED in bags.

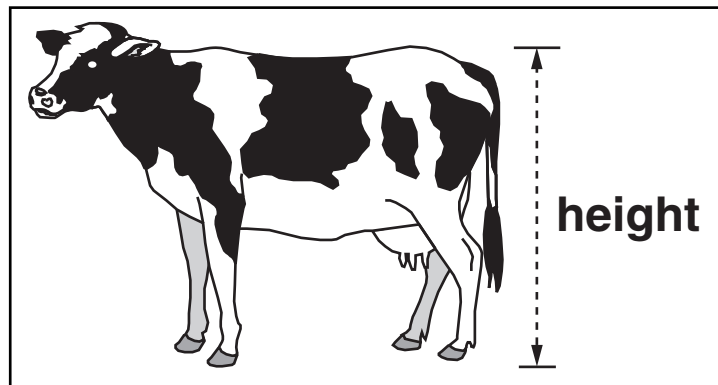
Suggest why it is important that the bag is sealed.

_____ [1]

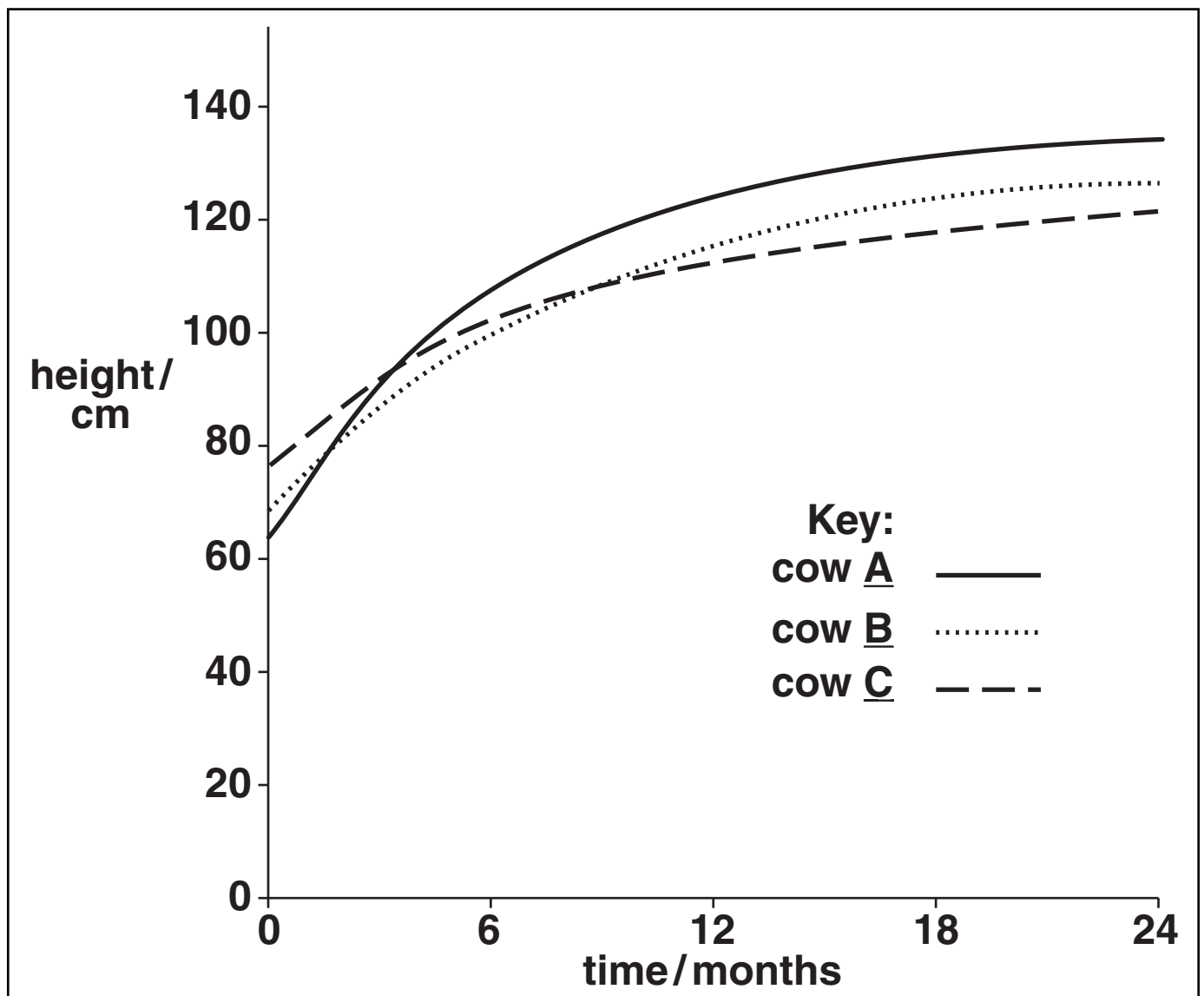
[Total: 8]

3 Dan has a herd of cattle.

He keeps a record of their growth by measuring their height.



(a) The graph shows the height of three cows measured over 24 months.



(i) Which cow, A, B or C, grew the fastest in the first 12 months?

cow _____

[1]

(ii) All the cows were fed the same amount and type of food.

Suggest TWO reasons for their different rates of growth.

1 _____

2 _____

[2]

(b) Dan's cows produce a lot of manure.

Explain how this manure can be useful on his farm.

[2]

[Total: 5]

4 Josh keeps hens.

(a) What type of farming is this?

Put a tick (✓) in the box next to the correct answer.

- | | |
|---------------------|--------------------------|
| arable | <input type="checkbox"/> |
| beef | <input type="checkbox"/> |
| dairy | <input type="checkbox"/> |
| poultry | <input type="checkbox"/> |
| horticulture | <input type="checkbox"/> |

[1]

(b) The table shows the three different ways hens are kept in the UK.

	<u>BATTERY HENS</u>	<u>BARN HENS</u>	<u>FREE RANGE HENS</u>
conditions	Kept in small cages inside sheds. Automatically fed on a carefully controlled diet. Eggs collected automatically.	Kept in large barns. Can move around inside barn. Farmer feeds hens on a carefully controlled diet. Farmer walks around the barn to collect eggs.	Kept on a farm. Can move around farm. They eat a varied diet. Farmer walks around field to collect eggs.
percentage in the UK	63		32
price of 6 eggs	£0.70	£0.80	£1.40

- (i) Complete the table to show the percentage of hens kept in barns in the UK. [1]**
- (ii) Eggs produced by battery hens are the cheapest.**

Explain TWO reasons why.

[2]

- (iii) Keeping battery hens in the UK will be banned from 2011.

Many people think that keeping hens in this way is cruel.

Explain why keeping battery hens is thought to be cruel.

[2]

- (c) The eggs from Josh's farm have a quality mark stamped on them.

- (i) What does a quality mark tell you about the eggs?

Put a tick (✓) in the box next to the CORRECT answer.

- | | |
|---------------------------------------|--------------------------|
| They are organic. | <input type="checkbox"/> |
| They are free range. | <input type="checkbox"/> |
| They are produced in the UK. | <input type="checkbox"/> |
| They have reached a certain standard. | <input type="checkbox"/> |

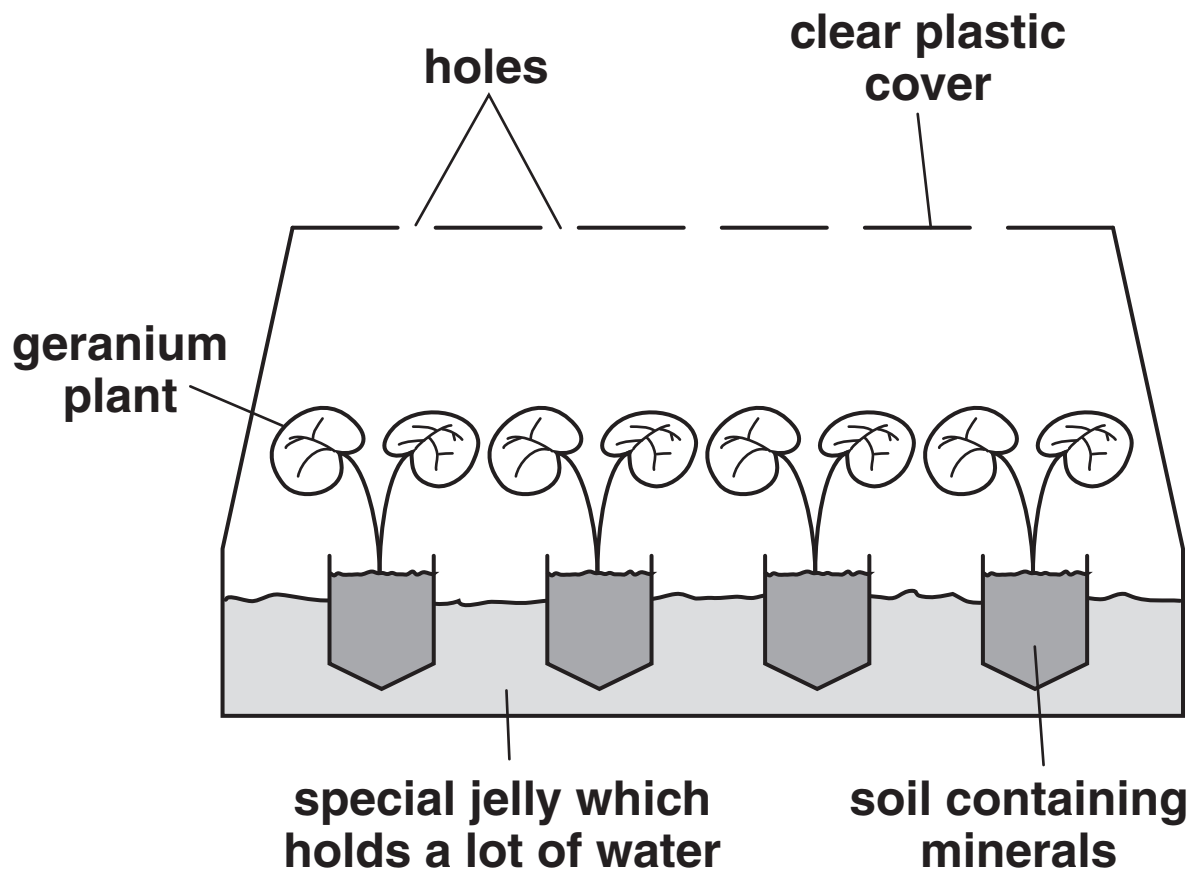
[1]

- (ii) What is the advantage TO JOSH of having a quality mark on the eggs?

[1]

[Total: 8]

5 Miranda buys a tray of small geranium plants.



- (a) The container is designed to help the young growing plants.

Draw a straight line to link each PART OF THE CONTAINER to its correct JOB.

PART OF CONTAINER

JOB

clear plastic cover

acts as a greenhouse

holes in cover

allows entry of gases for photosynthesis

special jelly

contains minerals for growth

soil

daily watering not required

[2]

(b) The pH of the soil is important to plants.

What does pH measure?

Put a tick (✓) in the box next to the correct answer.

- | | |
|------------------------------|--------------------------|
| acidity or alkalinity | <input type="checkbox"/> |
| water retention | <input type="checkbox"/> |
| oxygen availability | <input type="checkbox"/> |
| light intensity | <input type="checkbox"/> |

[1]

(c) The geranium plants were produced by taking cuttings.

(i) Describe how geranium cuttings are taken.

[3]

(ii) Geranium plants can also be produced from seeds.

Write down ONE advantage of producing new geranium plants from cuttings instead of using seeds.

[1]

[Total: 7]

END OF QUESTION PAPER

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