

Tuesday 22 January 2013 – Morning

GCSE ENVIRONMENTAL AND LAND-BASED SCIENCE

B682/01 Plant Cultivation and Small Animal Care (Foundation Tier)

Candidates answer on the Question Paper.
A calculator may be used for this paper.

Duration: 1 hour

OCR supplied materials:
None

Other materials required:

- Pencil
- Ruler (cm/mm)



Candidate forename		Candidate surname	
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Centre number						Candidate number				
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INSTRUCTIONS TO CANDIDATES

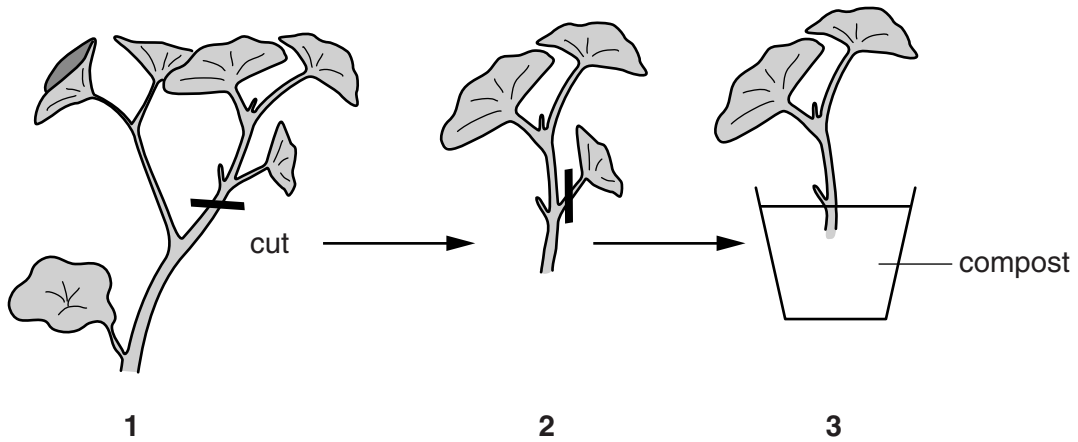
- Write your name, centre number and candidate number in the boxes above. Please write clearly and in capital letters.
- Use black ink. HB pencil may be used for graphs and diagrams only.
- Answer **all** the questions.
- Read each question carefully. Make sure you know what you have to do before starting your answer.
- Write your answer to each question in the space provided. Additional paper may be used if necessary but you must clearly show your candidate number, centre number and question number(s).
- Do **not** write in the bar codes.

INFORMATION FOR CANDIDATES

- Your quality of written communication is assessed in questions marked with a pencil (✎).
- 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 **50**.
- This document consists of **16** pages. Any blank pages are indicated.

Answer **all** the questions.

1 The diagrams show how to take a softwood cutting.



(a) Which **one** of the following plants can be propagated in this way?

- A daffodil
- B geranium
- C oak tree
- D potato

Answer **A, B, C or D** [1]

(b) Diagram 2 shows the lower leaf being removed.

This is done to reduce:

- A hormone levels
- B photosynthesis
- C respiration
- D water loss.

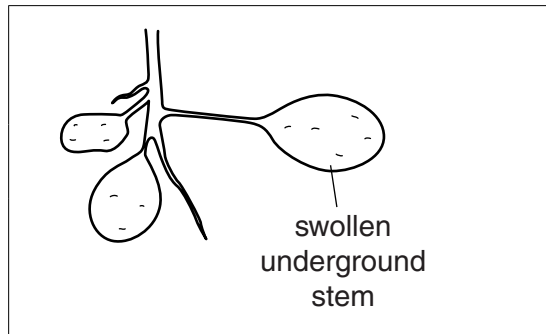
Answer **A, B, C or D** [1]

2 Bulbs, corms and tubers are plant organs used in plant cultivation.

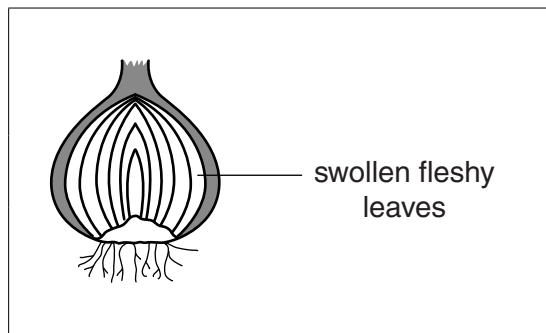
plant organ

example

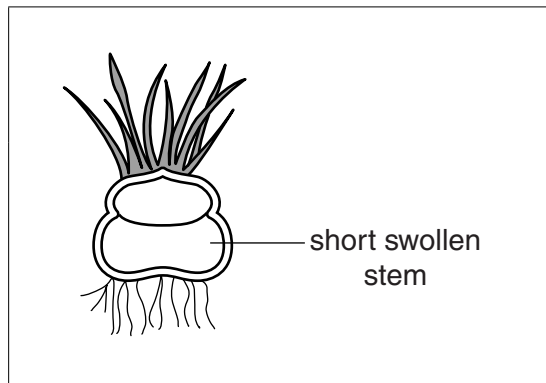
Bulb



Corm



Tuber



Draw a straight line to match up each **plant organ** to its correct **example**.

[2]

- 3 Papaya is a tropical fruit which is grown in an orchard.



- (a) Scientists set up three experiments to find the best technique for controlling weeds in the papaya orchard.

The results are shown in the table.

Technique	Dry mass of weeds in g/m ²	Fruit yield in t/ha	Costs in £/ha	Income in £/ha
Hand weeding	419	66	30	350
Spraying with herbicide	125	94	85	556
Growing pumpkins as ground cover	223	80	47	440

- (i) Which technique is the most profitable?

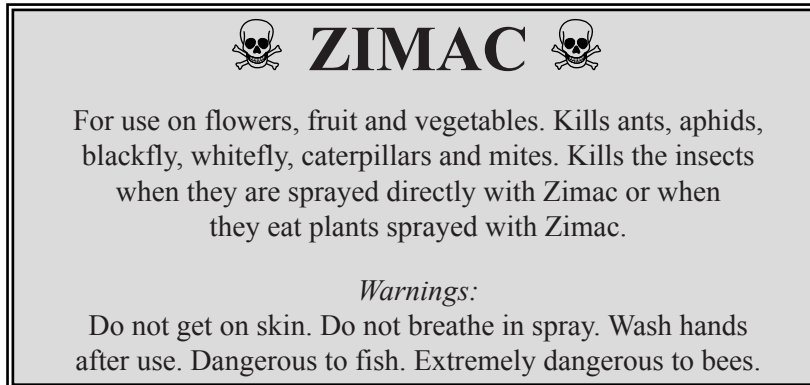
..... [1]

- (ii) How much profit did the farmer make using this technique?

Answer [1]

(b) The scientists wanted to control pests on the papaya trees.

The diagram shows the back of a packet of pesticide they could use.



The warning states that Zimac is extremely dangerous to bees.

Suggest why this information is important to the papaya grower.

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

(c) Pests can be controlled by biological and non-biological methods.

What is the difference between biological and non-biological methods of pest control?

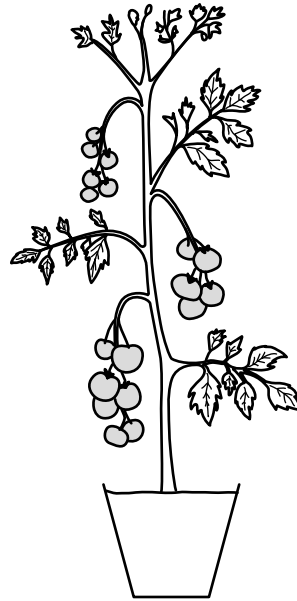
.....
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..... [2]

(c) Two tomato plants were bred together.



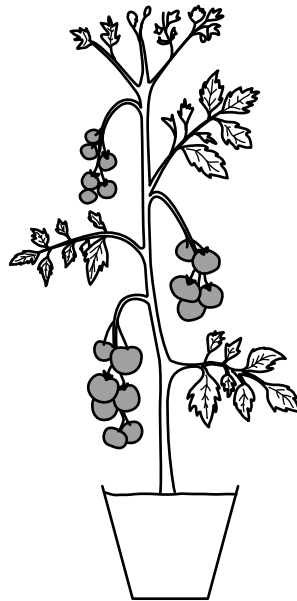
dwarf tomato plant
with red fruits

×



tall tomato plant
with green fruits

The appearance of the F1 generation is shown.



tall tomato plant
with red fruits

Which **two** characteristics shown in the diagrams are controlled by dominant alleles (genes)?

.....

..... [1]

- 5 A gardener buys some fertiliser for a lawn.

The label on the box reads:

BEST LAWN	
Compound Fertiliser 7-7-7	
Nitrogen (N)	7%
Total phosphorus pentoxide (P₂O₅)	7%
Soluble in water:	6.5%
Insoluble in water:	0.5%
Potassium oxide (K₂O)	7%

- (a) This fertiliser supplies the grass with **three** elements it needs to grow well.

Name these **three** elements.

1

2

3

[1]

- (b) What percentage (%) of phosphorus pentoxide is available to the grass?

Answer %

Explain your answer.

.....

.....

.....

[3]

- (c) The gardener thinks that adding five times as much nitrogen fertiliser will give an even better result.

Give **two** reasons why adding too much nitrogen fertiliser may lead to a very poor lawn developing.

.....

.....

.....

[2]

6 An elderly man lives alone.

He has a dog called Sandy.

(a) Suggest reasons why this man might keep a dog.

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

(b) When Sandy comes on heat (into season), her owner keeps her indoors.

Explain why.

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

7 (a) A cat has recently started scratching itself.

This would most likely be a sign of...

- A ... a bacterial disease.
- B ... an external parasite.
- C ... an internal parasite.
- D ... a viral infection.

Answer **A, B, C** or **D** [1]

(b) Scratching is a sign that an animal is unhealthy.

Suggest **three** things you would check to see if an animal is healthy.

- 1
- 2
- 3

[3]

(b) Different sized turkeys' eggs were incubated at three different temperatures.

Twenty eggs of each size were used at each temperature.

The table below shows the percentage of eggs of each size that hatched at each temperature.

Incubation temperature (°C)	% of eggs hatching			
	Eggs weighing 80 g–84 g	Eggs weighing 85 g–89 g	Eggs weighing 90 g–94 g	Eggs weighing 95 g–99 g
36.5	75	80	75	65
37.5	80	85	70	55
38.5	50	50	35	25

(i) Select the best incubation temperature for **small** eggs and suggest why a turkey farmer might **not** use this temperature to incubate all eggs.

.....

.....

..... [2]

(ii) Suggest how the experiment could be improved.

.....

.....

..... [2]

9 These labels are from two different rabbit foods.

FEED BAG A

NORTH SPECIALITY FEEDS RABBIT MUESLI 1 kg	
PROTEIN	12%
OIL	3%
CALCIUM	12 mg/kg
IRON	10 mg/kg
VITAMINS A, C, D	trace
FIBRE	12%

FEED BAG B

NORTH SPECIALITY FEEDS RABBIT MUESLI 1 kg	
PROTEIN	16%
OIL	6%
CALCIUM	20 mg/kg
IRON	18 mg/kg
VITAMINS A, C, D	trace
FIBRE	12%

(a) These rabbit foods contain protein.

(i) What is the difference in percentage (%) of protein in feed **B** compared with feed **A**?

Answer % [1]

(ii) Each feed bag has a mass of 1 kg.

Calculate how much more protein, in grams, is in bag **B** compared with bag **A**.

Answer g [1]

10 The photograph shows Matthew holding his snake.

Matthew went to the pet shop to buy his snake.

The pet shop owner gave him advice about handling the snake.



Which piece of advice about handling snakes is **not** correct?

- A make slow movements
- B handle the snake for short periods of time
- C hold the snake tightly to prevent it escaping
- D wash hands before and after handling

Answer **A, B, C** or **D** [1]

END OF QUESTION PAPER

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