

**Monday 19 June 2017 – Morning**

**GCSE ENVIRONMENTAL AND LAND-BASED SCIENCE**

**B682/02** Plant Cultivation and Small Animal Care (Higher Tier)

Candidates answer on the Question Paper.

**OCR supplied materials:**

None

**Other materials required:**

- Pencil
- Ruler (cm/mm)
- Calculator

**Duration: 1 hour**



Candidate forename		Candidate surname	
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Centre number						Candidate number				
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**INSTRUCTIONS TO CANDIDATES**

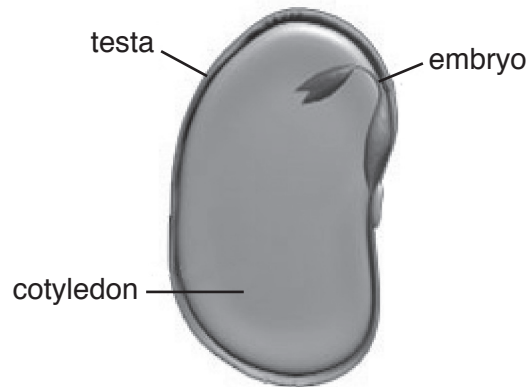
- Write your name, centre number and candidate number in the boxes above. Please write clearly and in capital letters.
- Use black ink. HB pencil may be used for graphs and diagrams only.
- Answer **all** the questions.
- Read each question carefully. Make sure you know what you have to do before starting your answer.
- Write your answer to each question in the space provided. If additional space is required, you should use the lined page(s) at the end of this booklet. The question number(s) must be clearly shown.
- Do **not** write in the barcodes.

**INFORMATION FOR CANDIDATES**

- The 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.

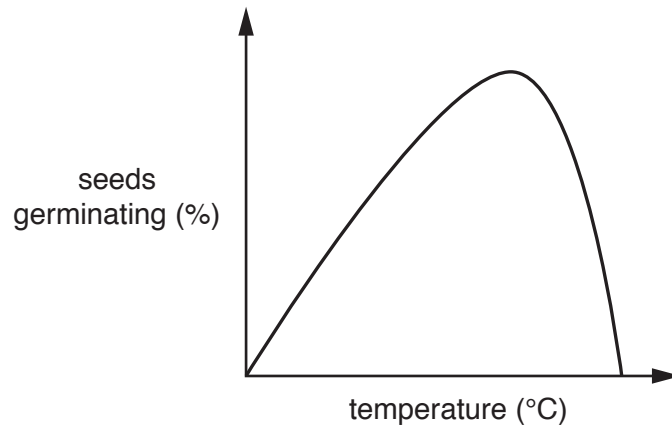
1 The diagram shows a germinating seed.



(a) What is the function of the **testa**?

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

(b) The graph shows the effect of temperature on seed germination.



Describe **and** explain the shape of the graph.

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

3

(c) Seeds need warmth in order to germinate.

State **one** other condition essential for seed germination.

..... [1]

[Total: 5]

2 The table shows the nutrient content of three different organic fertilisers.

Organic fertiliser type	Nitrogen (N) kg/m <sup>3</sup>	Phosphorus (P) kg/m <sup>3</sup>	Potassium (K) kg/m <sup>3</sup>
Organic Growmore	1.35	2.0	4.0
Grow Green	2.1	0.8	1.9
Rooster Booster	5.5	6.0	12.0

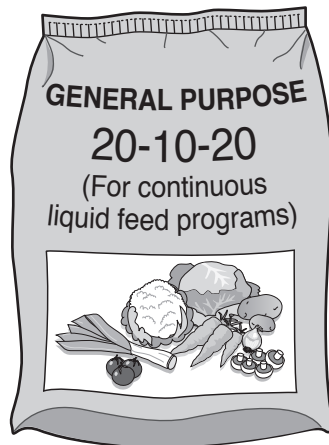
(a) Which fertiliser would you recommend for growing tomatoes? Give a reason for your answer.

.....

.....

..... [2]

(b) The diagram shows a label from a bag of artificial fertiliser.



The ratio of nutrients in this artificial fertiliser is similar to one of the organic fertilisers in the table above.

Which organic fertiliser has a similar ratio of nutrients? Explain your answer.

.....

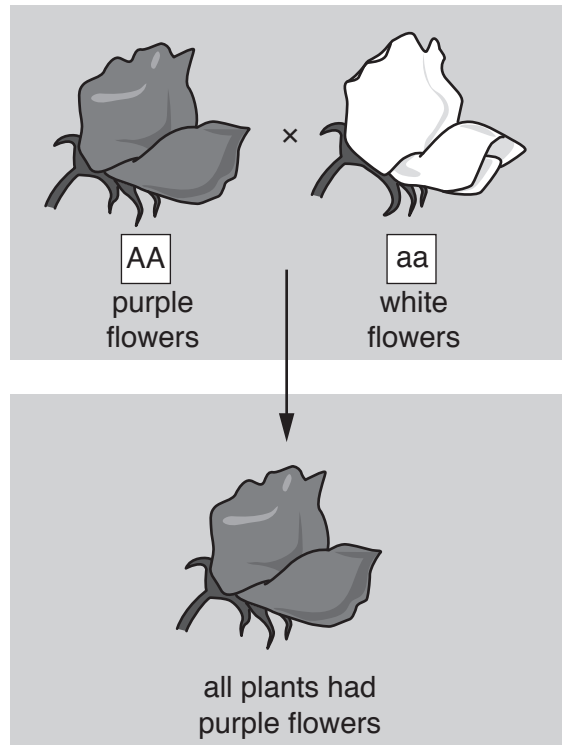
.....

..... [2]



3 A scientist bred a purple flowered pea plant with a white flowered pea plant.

All the offspring had purple flowers.



(a) The genotypes of both parents are shown.

What is the genotype of the F1 generation?

..... [1]

(b) Two of the purple flowered offspring were bred together.

What is the ratio of phenotypes and genotypes in the F2 generation?

Use the space below to show your working.

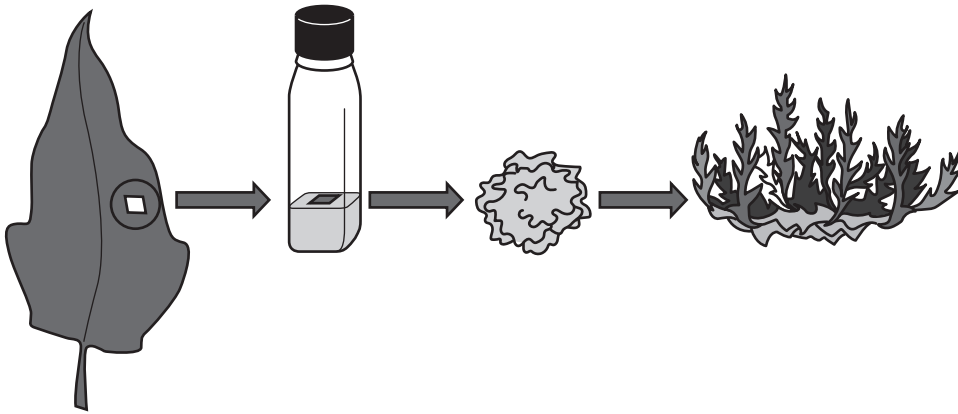
ratio of phenotypes = .....

ratio of genotypes = .....

[4]

[Total: 5]

4 The diagram shows a plant being propagated by tissue culture.



Use the diagram to explain how tissue culture is carried out and what is produced.

.....

.....

.....

.....

..... [3]

[Total: 3]

5 The photograph shows a small, mobile structure used by gardeners.



Name this structure and state **one** advantage of using it.

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.....

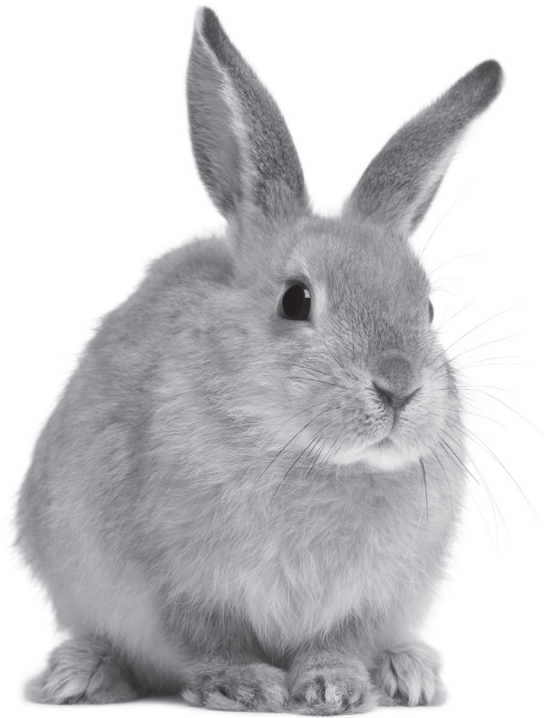
..... [2]

[Total: 2]



6 The photograph shows a pet rabbit.

She has just given birth.



Which **one** piece of advice would **not** be suitable for the care of this rabbit?

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

Provide extra bedding for a nest.

Check on the mother and babies regularly.

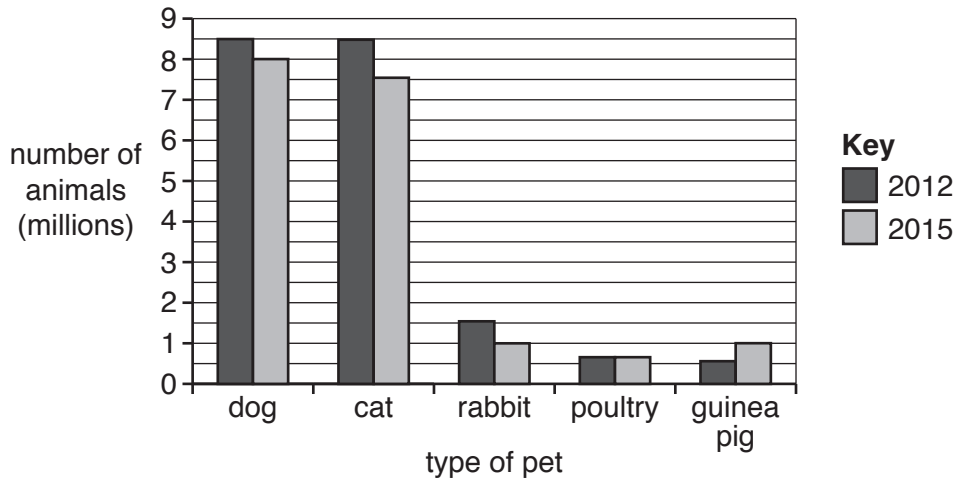
Provide plenty of food and water.

Keep the mother in a hutch away from other rabbits.

[1]

[Total: 1]

7 The data below shows the number of pets owned in the UK in 2012 and 2015.



(a) Describe what the data from the two surveys shows.

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..... [3]

(b) To prevent the birth of unwanted animals, female pets can be spayed.

Describe what is meant by spaying **and** discuss the biological, ethical and welfare issues surrounding this procedure.



*The quality of written communication will be assessed in your answer to the question.*

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..... [6]

**[Total: 9]**

8 Dog owners use selective breeding to produce desired characteristics in puppies.

The diagrams show different breeding techniques.

Diagram A

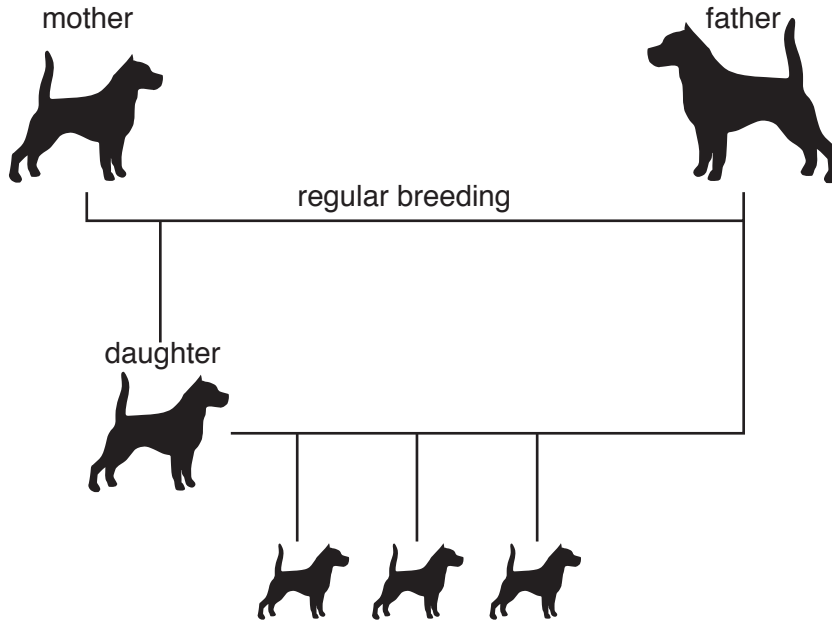
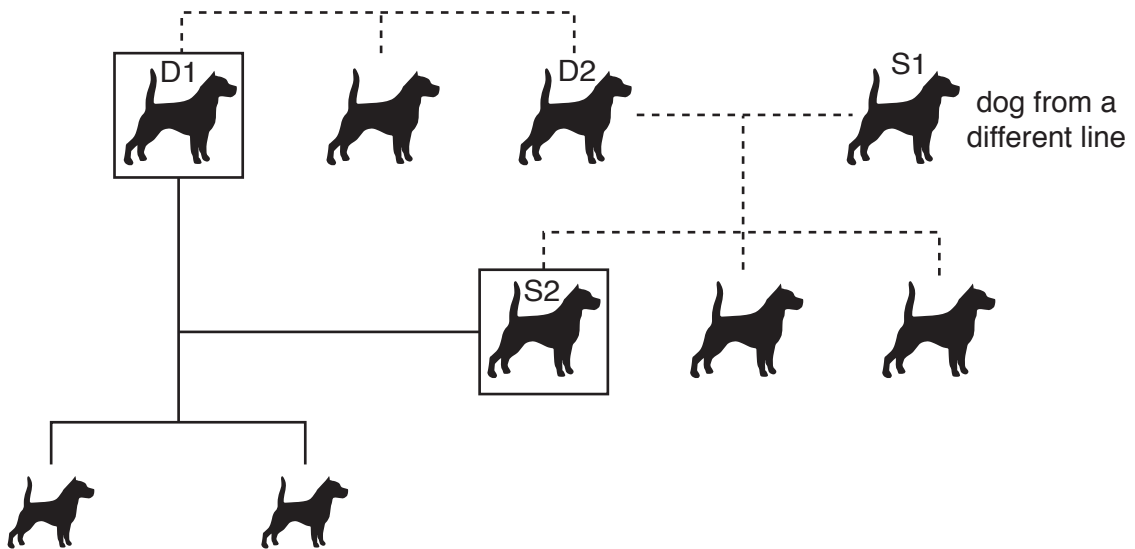


Diagram B



(a) Use the diagrams to explain the difference between line breeding and inbreeding.

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

(b) Dogs can also be cross bred.

On **diagram B**, circle two dogs that could be cross bred.

[1]

(c) Discuss the advantages and disadvantages of line breeding, cross breeding and inbreeding.

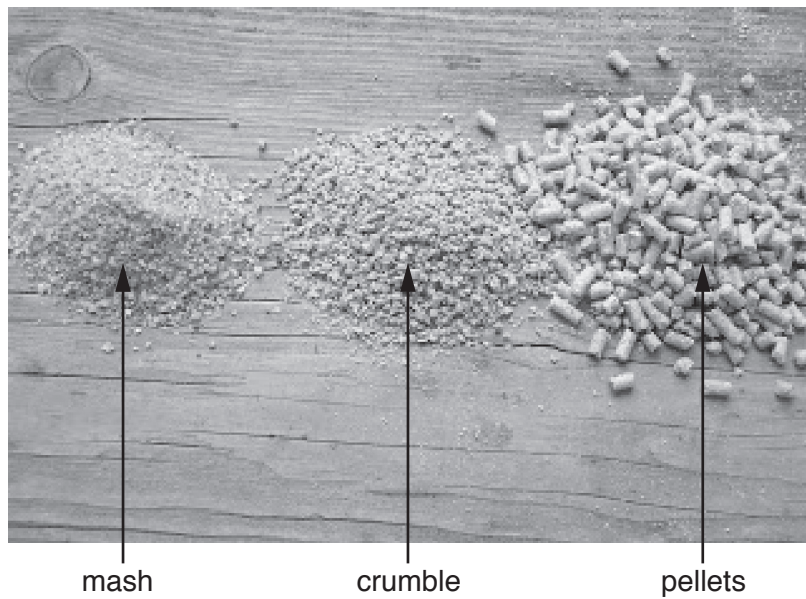


*The quality of written communication will be assessed in your answer to the question.*

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..... [6]

[Total: 9]

- 9 The photograph shows three different types of feed that can be given to hens.



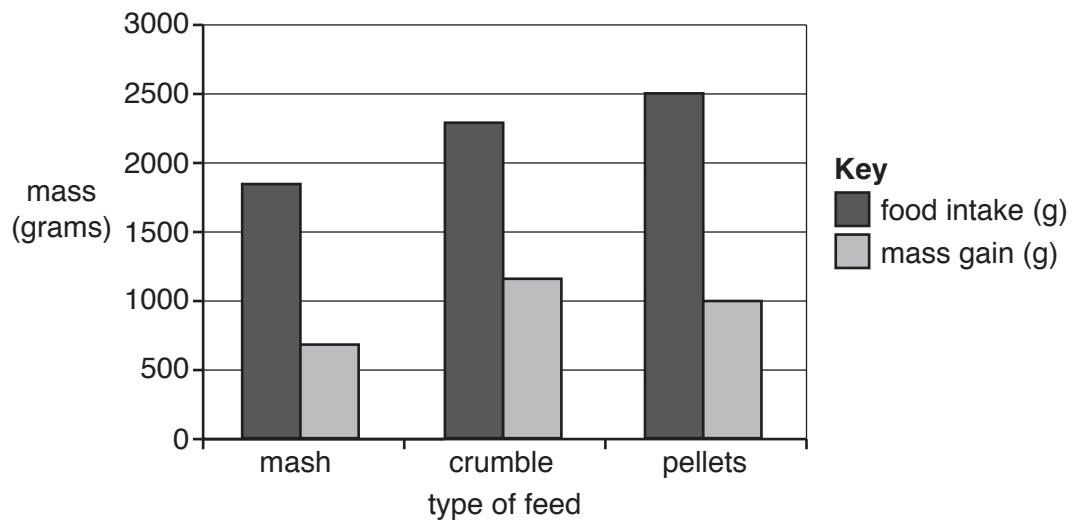
Clara has three hens.

She gave each hen a different type of feed.

After 35 days she calculated the mass of feed they had eaten.

She also worked out how much mass they had gained.

The data is shown in the graph.



- (a) A 1 kg bag of each type of feed costs £2.00.

How much extra did it cost Clara to feed pellets rather than crumble to her hen for 35 days?

Show your workings.

£..... [2]

- (b) Clara's results are not scientifically valid.

Suggest what is wrong with her experiment.

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

- (c) Describe the role of the crop and gizzard in the digestion of **pelleted** hen feed.

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

[Total: 6]

END OF QUESTION PAPER

**ADDITIONAL ANSWER SPACE**

If additional space is required, you should use the following lined page(s). The question number(s) must be clearly shown in the margin(s).

A large rectangular area with a vertical solid line on the left side and horizontal dotted lines across the rest of the page, providing space for writing answers.



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