

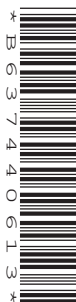
Thursday 13 June 2013 – Morning**GCSE ENVIRONMENTAL AND LAND-BASED SCIENCE****B682/02** Plant Cultivation and Small Animal Care (Higher Tier)

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)

Duration: 1 hour

Candidate forename		Candidate surname	
Centre number		Candidate number	

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

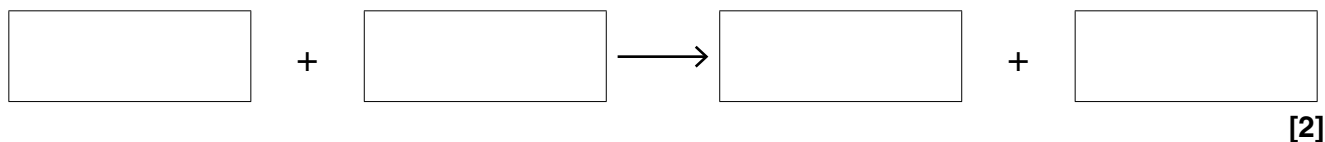
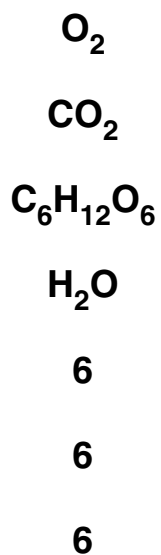
- Your quality of written communication is assessed in questions marked with a pencil (✎).
- The number of marks is given in brackets [] at the end of each question or part question.
- The total number of marks for this paper is **50**.
- This document consists of **16** pages. Any blank pages are indicated.

2

Answer **all** the questions.

- 1 Seedlings must carry out photosynthesis in order to grow.

Complete the symbol equation for photosynthesis by putting the numbers and formulae into their correct places.

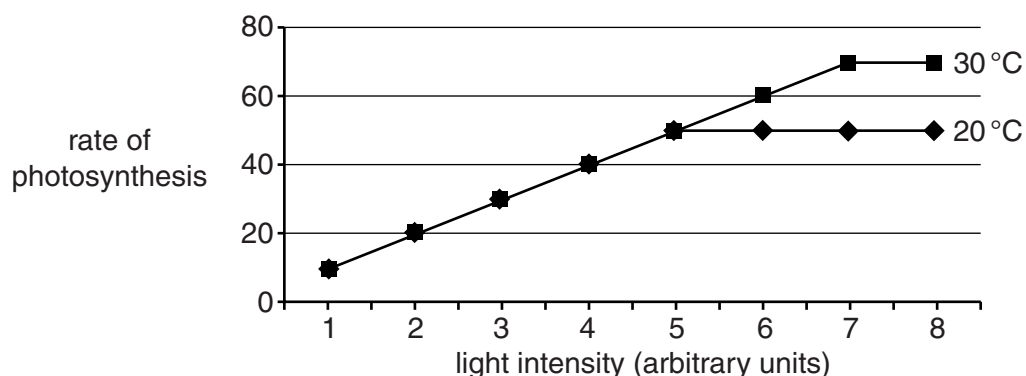


[2]

[Total: 2]

3

- 2 The graph shows the effect of increasing light intensity on the rate of photosynthesis at two temperatures.



- (a) As the light intensity increases, the rate of photosynthesis changes.

Write an **L** on the graph at the point when light stops becoming a limiting factor at 30°C. [1]

- (b) Explain the shape of the graphs.

.....

 [2]

- (c) The temperature in a glasshouse is at 30°C and its light intensity is 7 units.

Suggest how a gardener could alter the conditions in the glasshouse to maximise the rate of photosynthesis.

Explain your answer.

.....

 [3]

[Total: 6]

4

- 3 A gardener wants a good yield of tomatoes.

To achieve this he must feed the plants.

A book recommends a high potassium feed with a ratio 1:1:2.

- (a) Which of the following inorganic fertilisers is a high potassium feed with a ratio 1:1:2?

A

TomFert

18:18:9

B

TomGrow

24:24:48

C

TopToms

5:5:15

D

BigToms

12:12:6

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

- (b) Bananas contain high levels of potassium.

Justin decided to chop up some bananas and bury them in the soil around his tomato plants.

Suggest **two disadvantages** of using bananas as a tomato fertiliser.

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..... [2]

[Total: 3]

5

- 4 Caroline noticed that the soil on her allotment quickly became waterlogged during heavy rain.

She tested the soil and found that it was pH 5.0.

The table shows the percentage (%) of nutrients that are available to plants at different soil pH values.

pH	% N	% P	% K
4.5	30	25	35
5.0	55	35	50
5.5	75	50	75
6.0	90	50	100
7.0	100	100	100

Describe the techniques she could use to improve her soil **and** explain why these techniques will work.

Use data from the table to help you to answer the question.



The quality of written communication will be assessed in your answer.

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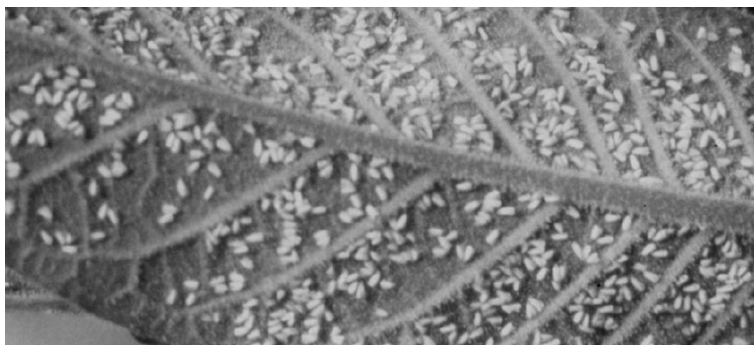
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..... [6]

[Total: 6]

- 5 The photograph shows whitefly, a pest that attacks tomato plants.



Martin grew tomato plants in three glasshouses.

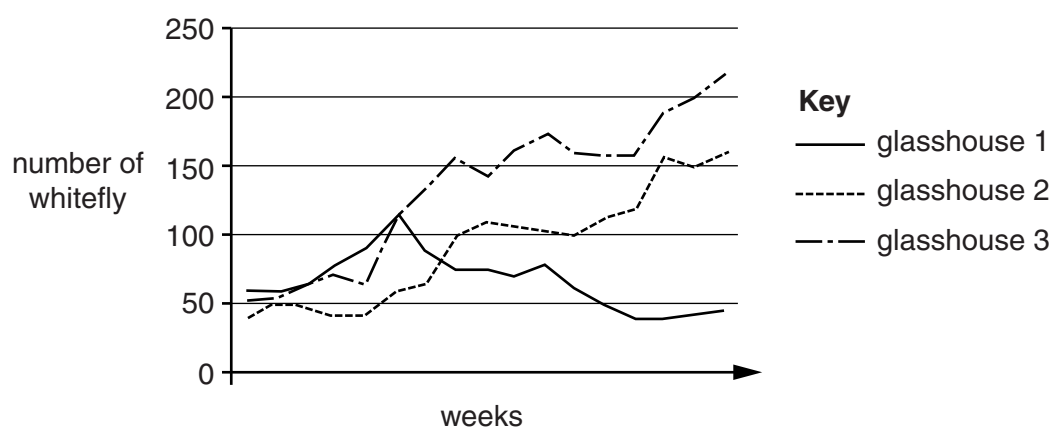
He wanted to find the best way to control the whitefly in all his glasshouses.

He added some parasitic wasps to the tomatoes in glasshouse 1.

He planted yellow marigold plants with the tomatoes in glasshouse 2.

He grew only tomatoes in glasshouse 3.

He counted the total number of whitefly in each glasshouse in each week of the growing season.



- (a) Describe and explain the shape of the graph for glasshouse 1 (containing tomatoes and the parasitic wasps).

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..... [3]

7

(b) From his investigation, Martin concludes that:

‘Marigolds produce a chemical which repels whitefly.’

Discuss whether Martin’s results support his conclusion.

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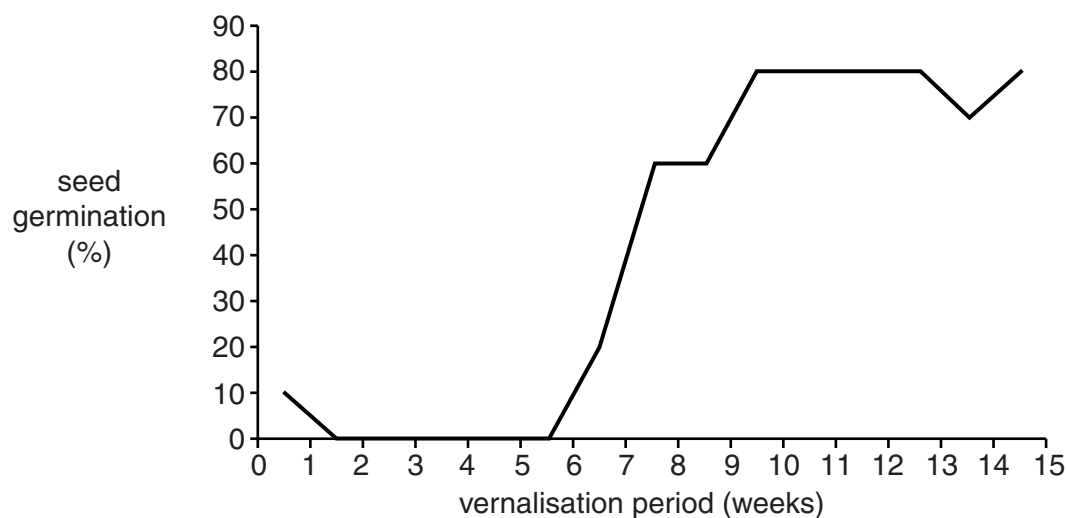
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[Total: 5]

8

- 6 Many seeds need a period of low temperature (vernalisation) to break dormancy and start germination.

The graph shows how different lengths of vernalisation affect seed germination.



- (a) Commercial growers often put seeds in a chilling cabinet to break the seed dormancy.

When the seeds are then put into warm conditions, they start to germinate.

How long would you suggest the seeds are chilled for?

Explain your answer.

.....

 [2]

- (b) Suggest why some seeds have evolved to need a period of chilling.

.....
 [1]

[Total: 3]

7 The diagrams show some foods that are suitable for rabbits.

dandelion leaves



pellets



hay



Food can be classed as:

- concentrate, **C**
- roughage, **R**
- succulent, **S**

Write the letter **C**, **R** or **S** in the box under each food.

[2]

[Total: 2]

8 Henry has a pet rabbit.

The rabbit is pregnant.

Henry has never looked after a pregnant rabbit before.

Write some advice for Henry about how he should care for the rabbit during her pregnancy **and** how he should care for the rabbit and her young after the birth.



The quality of written communication will be assessed in your answer.

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[Total: 6]

- 9 (a) Hens sometimes lay eggs with soft shells or no shells.

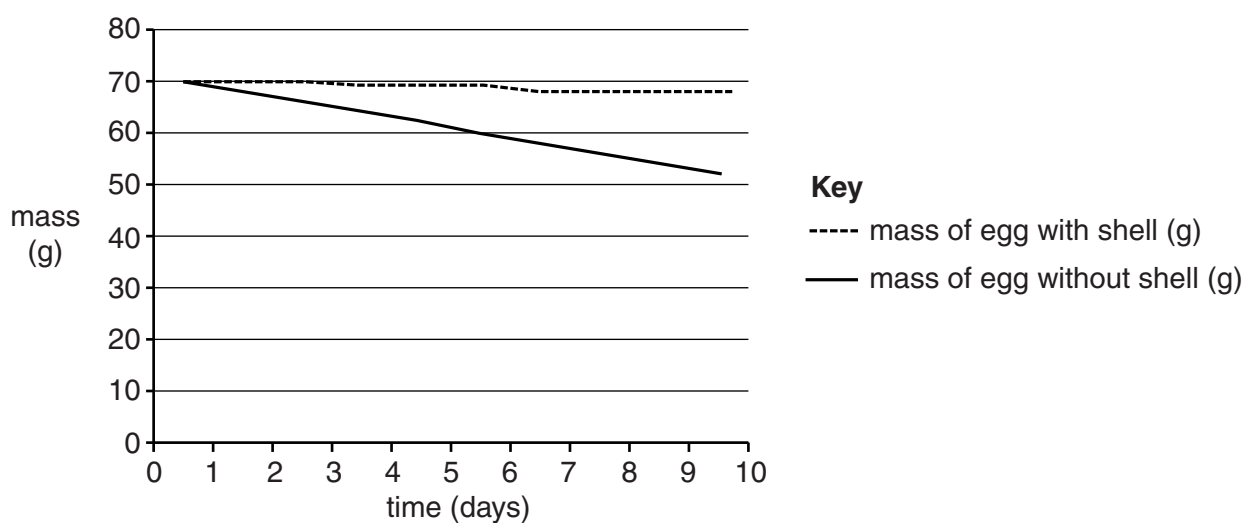
Suggest a reason for this.

.....
 [1]

- (b) An egg with a shell and an egg without a shell were left for 10 days in an incubator.

The mass of each egg was recorded every day.

The results are shown in the graph.



Describe what the graph shows.

Suggest a reason for the results.

.....

 [2]

- (c) Hens lay eggs through their vent (cloaca).

How does the function of the vent differ from the function of the vagina of a mammal?

.....
 [1]

[Total: 4]

12

10 Animals have been bred over a number of years by a mixture of cross breeding and line breeding.

Discuss the advantages and disadvantages of cross breeding and line breeding.



The quality of written communication will be assessed in your answer.

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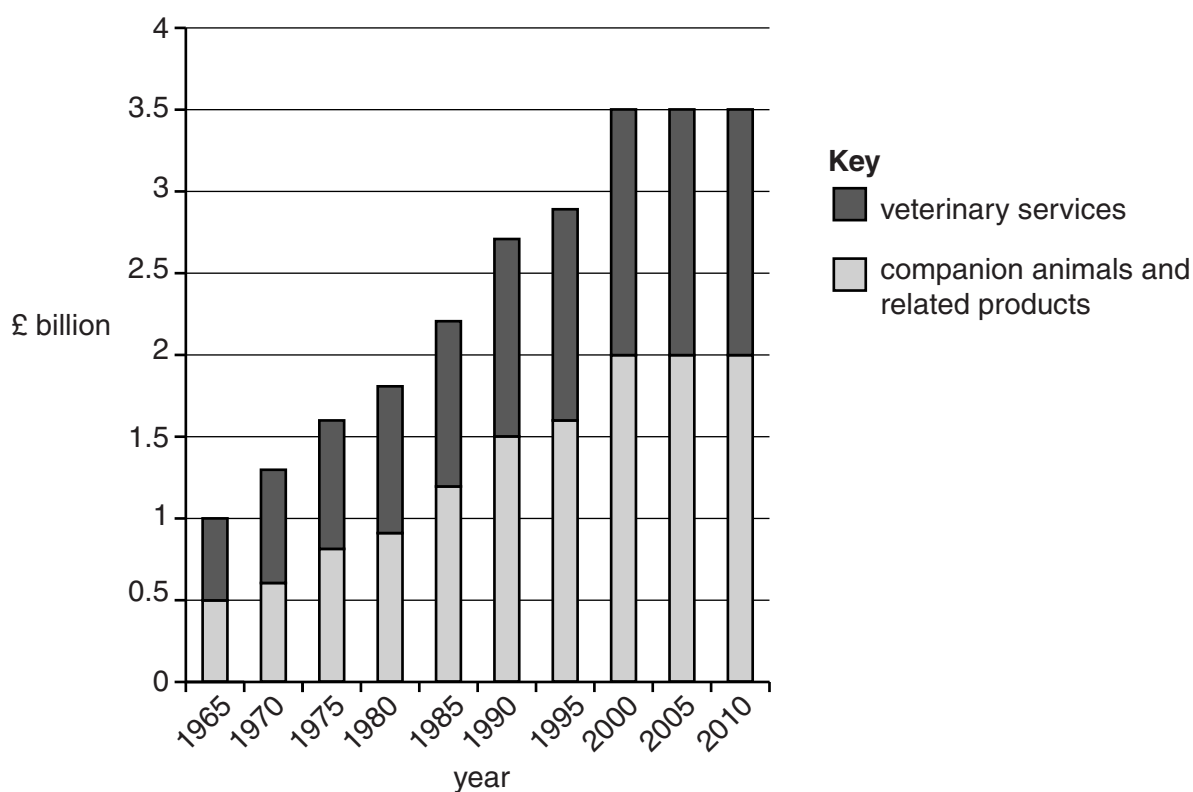
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[Total: 6]

13

- 11 The graph shows the amount of money spent on companion animals by pet owners in the UK.



- (a) Calculate the percentage (%) increase in the amount of money spent on **veterinary services** between 1965 and 2010.

Show your working.

Answer % [2]

- (b) A newspaper article stated that this graph is evidence that more people owned pets in 2010 than in 1965.

Discuss this statement.

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..... [2]

[Total: 4]

14

- 12 Veterinary surgeons often encourage owners to have their pets castrated or spayed.

Discuss the arguments for and against having this done.

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..... [3]

[Total: 3]

END OF QUESTION PAPER

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