



Oxford Cambridge and RSA

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**Wednesday 13 June 2018 – Morning**

**GCSE ENVIRONMENTAL AND LAND-BASED SCIENCE**

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



Candidates answer on the Question Paper.

**OCR supplied materials:**

None

**Duration:** 1 hour

**Other materials required:**

- Pencil
- Ruler (cm/mm)
- Calculator



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**

- Your quality of written communication is assessed in questions marked with a pencil (-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 (a) The photographs show different types of tomato.

The tomatoes have been picked from two different types of tomato plants.

These plants have been selectively bred by tomato growers.



Suggest **two** features that the tomato growers have bred for.

1 .....

2 .....

[2]

(b) A plant breeder crossed these two different tomato plants.

The photograph shows the new tomatoes produced.



(i) Use the correct phrase from the list below to complete the sentence.

**dominant to**      **recessive to**      **stronger than**      **weaker than**

The allele (gene) for round tomatoes is ..... the allele for plum shaped tomatoes.

[1]

(ii) The new tomatoes are which of the following generations?

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

F0

F1

F2

F3

[1]

(c) A grower states that this new tomato plant has hybrid vigour.

Explain what is meant by the term **hybrid vigour**.

Use an example to explain your answer.

.....  
.....  
.....  
.....

[2]

2 Farmyard manures are organic fertilisers.

The table shows the nutrient values of some common farmyard manures.

Type of manure	Nitrogen (N) %	Phosphorus (P) %	Potassium (K) %
Cow	0.6	0.4	0.5
Horse	0.7	0.3	0.5
Pig	0.8	0.7	0.5
Chicken	1.1	0.8	0.5

(a) What is meant by the term **organic** in organic fertilisers?

.....  
.....

[1]

(b) A gardener wants to improve the growth of vegetables on their allotment.

Using **only** the information in the table, which type of manure would you recommend and why?

.....  
.....  
.....  
.....

[2]

(c) Growmore is an inorganic fertiliser that contains the following nutrient values.

	Nitrogen (N) %	Phosphorus (P) %	Potassium (K) %
Growmore	7	7	7

A gardener prefers to add organic fertilisers to the soil rather than use Growmore.

Cost may be one reason for using organic fertilisers.

Suggest **two** other reasons.

1 .....

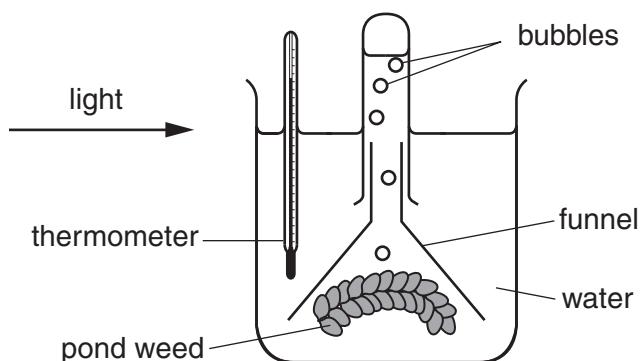
.....  
2 .....

[2]

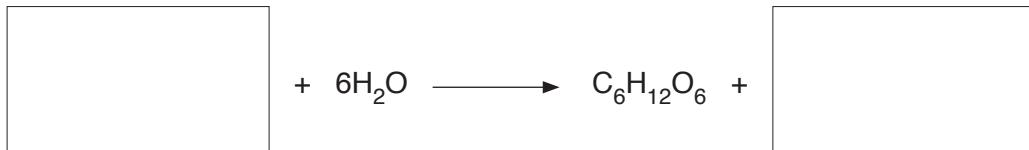
3 (a) Jacob carried out an experiment to see how temperature affected the rate of photosynthesis.

He set up an experiment as shown in the diagram below.

He carried out the experiment four times. Each time he used water at different temperatures. He counted how many bubbles the pond weed gave off in one minute at each temperature.



Complete the balanced symbol equation for photosynthesis.

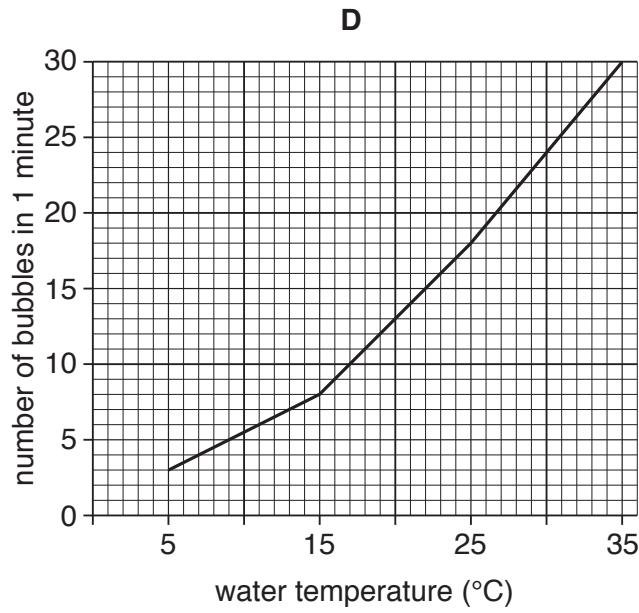
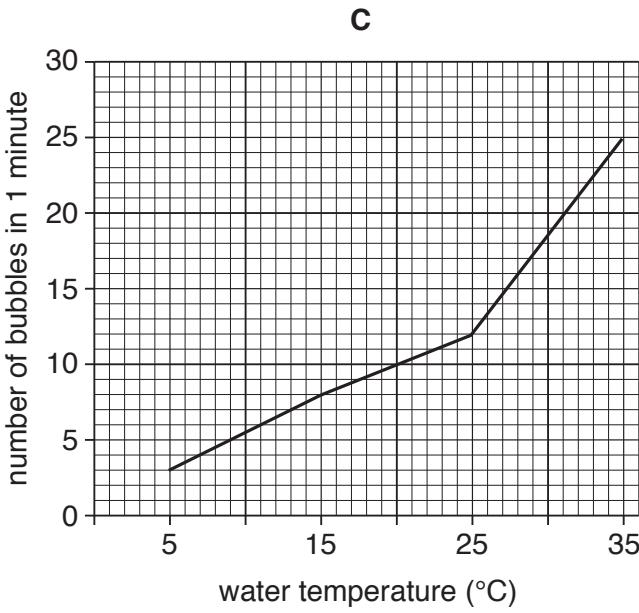
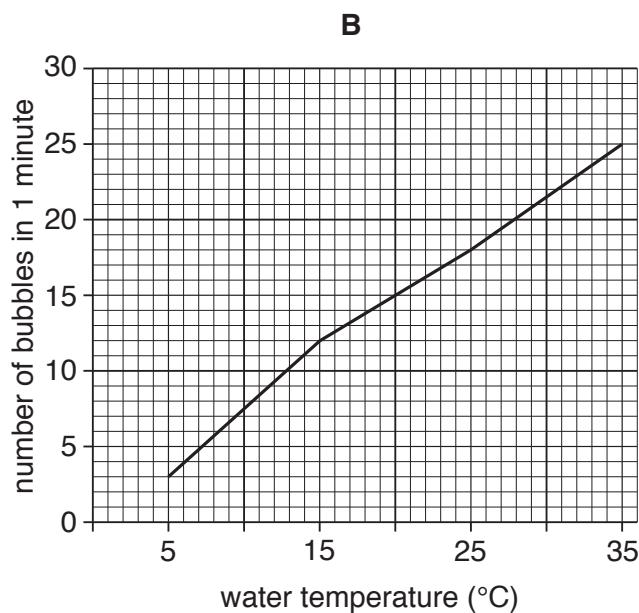
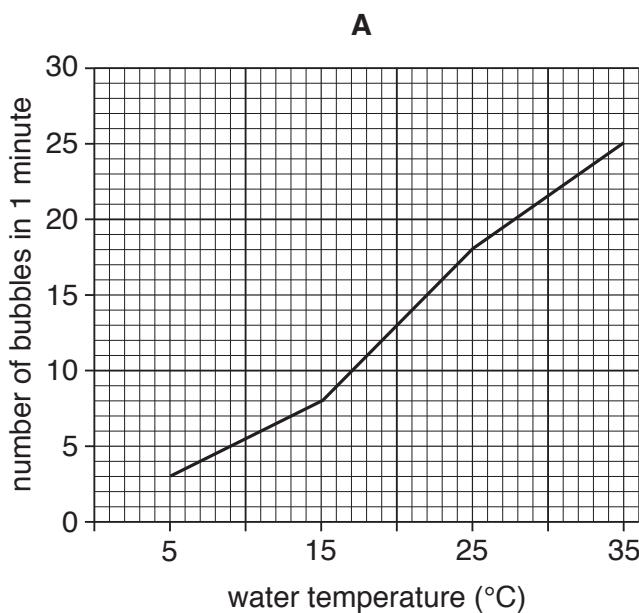


[1]

(b) Jacob's results are shown in the table below.

<b>Water temperature (°C)</b>	5	15	25	35
<b>Number of bubbles in 1 minute</b>	3	8	18	25

Which of the following graphs, **A**, **B**, **C** or **D**, represents Jacob's results?



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

(c) Jacob has a glasshouse.

He wants to use the results from his experiment to decide what temperature is needed for the glasshouse.

He decides to heat his glasshouse to 25°C and not 35°C.

Explain why you think he made this decision.

.....  
.....  
.....  
.....

[2]

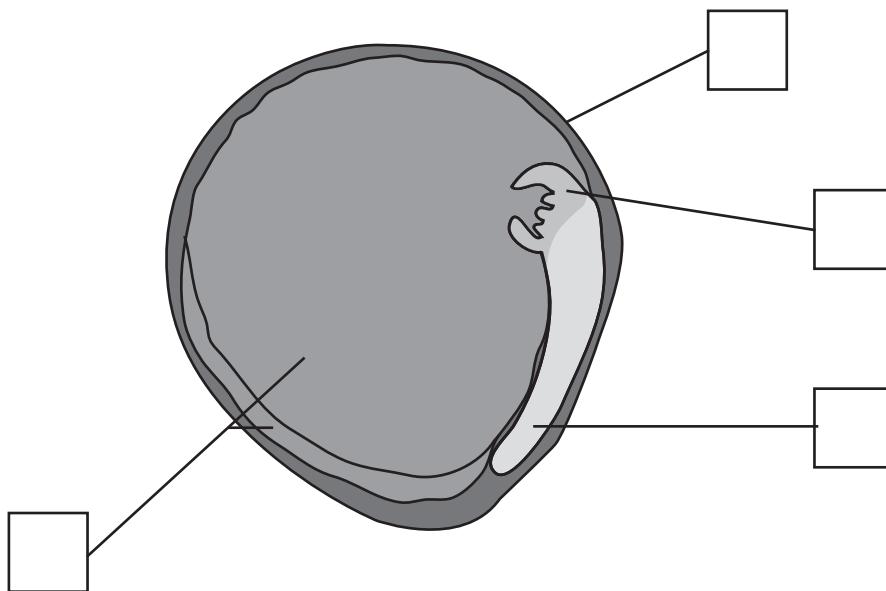
(d) State **two** factors, other than temperature, that can be changed to increase the growth of plants.

.....  
.....  
.....  
.....

[2]

4 (a) The diagram shows a cross section through a pea seed.

Place a tick (✓) in the box that points to the **cotyledon**.



[1]

(b) A scientist investigated the chemicals in pea seeds when they germinate.

She analysed the seeds in one group **before** they started to germinate.

She germinated the seeds in the other group **then** analysed the seedlings.

Chemical	Percentage (%) of dry mass	
	Seeds before germination	Seedlings after germination
Protein	25	25
Lipids (Fats)	50	20
Sugars	5	15
Cellulose	5	10
Other substances	15	20

Describe what happened to the percentages of lipids and sugars during germination.

Use data from the table to support your answer.

.....

.....

.....

.....

.....

[3]

(c) Describe and explain the roles of water, oxygen and temperature in the germination of pea seeds.



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

[6]

- [6]

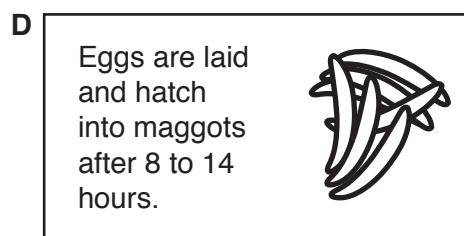
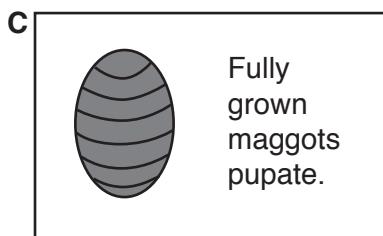
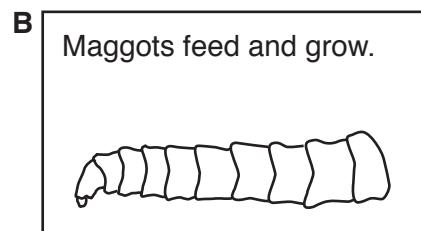
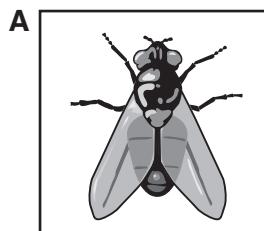
10

5 (a) Blowflies can lay eggs in the fur of a rabbit's hindquarters.

A blowfly maggot infestation can seriously affect a rabbit's health and cause death.

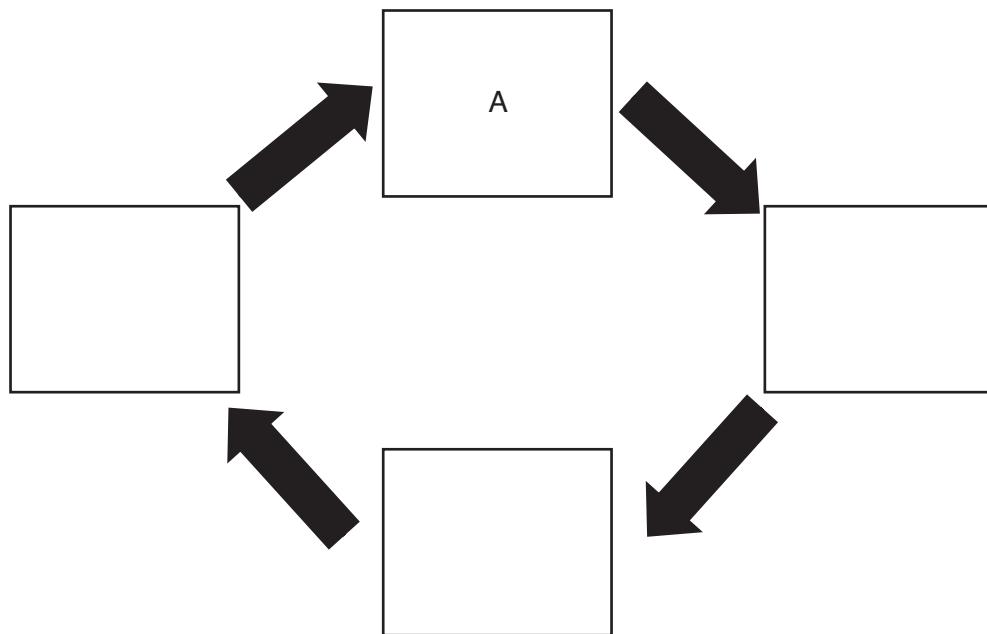
Stages of the blowfly life cycle are illustrated below.

The stages are in the wrong order.



Put the stages of the life cycle in the correct order using the diagram below.

One has been done for you.



[1]

(b) A blowfly lays its eggs on a rabbit.

What is the shortest time, in hours, before eggs turn into maggots?

..... hours [1]

(c) What type of organism is a blowfly maggot?

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

## bacterium

1

external parasite

10

fungus

10

## internal parasite

1

[1]

(d) Good husbandry can prevent blowfly maggot infestation.

Describe how you would know a rabbit has a blowfly maggot infestation and how you could prevent this infestation.



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

[6]

12

6 (a) The photograph shows Mushu, a pet bearded dragon.



Bearded dragons are a type of reptile.

Mushu is fed on a diet of live insects such as crickets.

He eats one cricket a day.

The local pet shop sells tubs of crickets. Each tub contains 28 crickets.

These tubs cost £4.00 each.

All the crickets stay alive in the tub.

(i) How many weeks will one tub of crickets last?

..... weeks [1]

(ii) How much does it cost per week to buy the crickets?

£ ..... [1]

(b) Owning pets such as Mushu can be expensive.

Food is one of the costs.

Suggest **one** other way in which Mushu might cost his owner money.

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

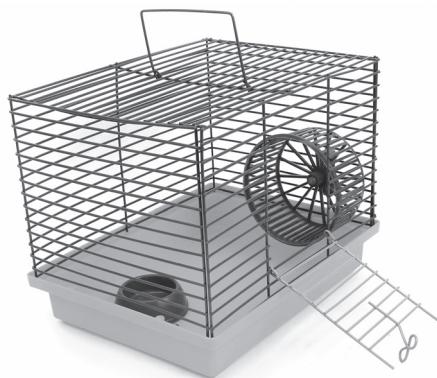
(c) Mushu's owner sprinkles powder containing calcium over the crickets before feeding them to Mushu.

Suggest why.

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

7 These photographs show the features of good animal housing.

They are suited to different small animals.



## A cage for a hamster



## A cage for birds



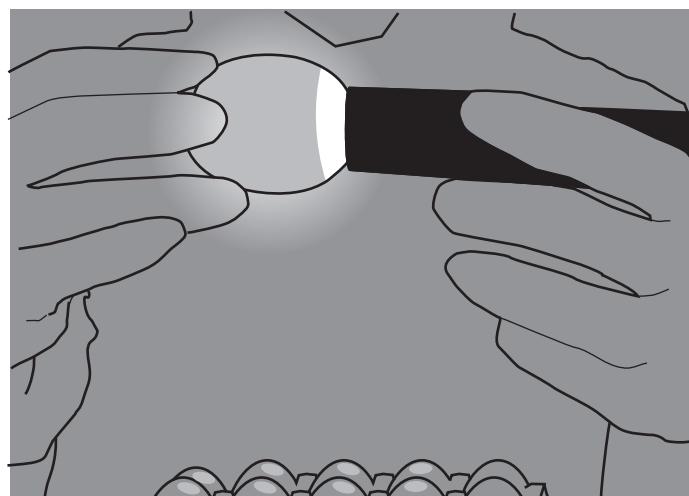
## A vivarium for bearded dragons

Describe the similarities and differences in the housing and the needs of the animals.



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

8 (a) The diagram shows an egg being candled.



Describe how **and** why you candle an egg.

.....

.....

.....

.....

[2]

(b) The diagram shows what can be seen when an egg is candled.



How long has this egg been incubated for?

Put a **ring** around the correct answer.

1 day

7 days

14 days

21 days

[1]

15

(c) The photograph shows a chick hatched from this egg.



This chick has been bred for a specific reason.

Suggest one reason for breeding chicks.

.....  
.....

[1]

**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).



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