CAMBRIDGE
International Education

# Cambridge IGCSE™

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| CANDIDATE NAME | | | | | | | | | |
| CENTRE NUMBER | | | | | | CANDIDATE NUMBER | | | |

**BIOLOGY** **0610/63**

Paper 6 Alternative to Practical **May/June 2026**

**1 hour**

You must answer on the question paper.

No additional materials are needed.

**INSTRUCTIONS**
- Answer **all** questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen. Do **not** use correction fluid or tape.
- Do **not** write on any bar codes.
- You may use a calculator.
- You should show all your working and use appropriate units.

**INFORMATION**
- The total mark for this paper is 40.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **16** pages. Any blank pages are indicated.

© Cambridge University Press & Assessment 2026

**BLANK PAGE**

© Cambridge University Press & Assessment 2026 

**1** A student investigated osmosis in cylinders of potato tissue placed in different concentrations of salt solution.

Water will move by osmosis into or out of cells, from an area of lower salt concentration to an area of higher salt concentration.

Salt is a solute. If there is no difference in the solute concentrations inside and outside of the cells, there will be no net movement of water by osmosis.

The student was provided with five cylinders of potato tissue. The cylinders all had the same diameter.

The student used this method:

step 1 Label five test-tubes **A**, **B**, **C**, **D** and **E**.

step 2 Use the volumes of 4% salt solution and distilled water shown in Table 1.1 to make the salt solutions in test-tubes **A**, **B**, **C**, **D** and **E**.

**(a) (i)** Complete Table 1.1 by writing in the final salt solution concentration in test-tube **B**.

View solution

**Table 1.1**

| test-tube | volume of 4% salt solution / $cm^3$ | volume of distilled water / $cm^3$ | final percentage concentration of the salt solution |
|---|---|---|---|
| **A** | 0.0 | 20.0 | 0.0 |
| **B** | 2.5 | 17.5 | ..... |
| **C** | 5.0 | 15.0 | 1.0 |
| **D** | 10.0 | 10.0 | 2.0 |
| **E** | 20.0 | 0.0 | 4.0 |

[1]

step 3 Place the potato cylinders on a white tile and cut each cylinder to a length of exactly 40 mm.

step 4 Put one potato cylinder into each test-tube.

step 5 Start the stop-clock and keep the potato cylinders in the test-tubes for **60** minutes.

step 6 After 60 minutes, remove the potato cylinder from test-tube **A** and measure the final length of the potato cylinder.

step 7 Repeat step 6 with the potato cylinders in test-tubes **B**, **C**, **D** and **E**.

© Cambridge University Press & Assessment 2026 

**(ii)** Figure 1.1 shows the actual size of the potato cylinders after soaking in the different solutions for 60 minutes.

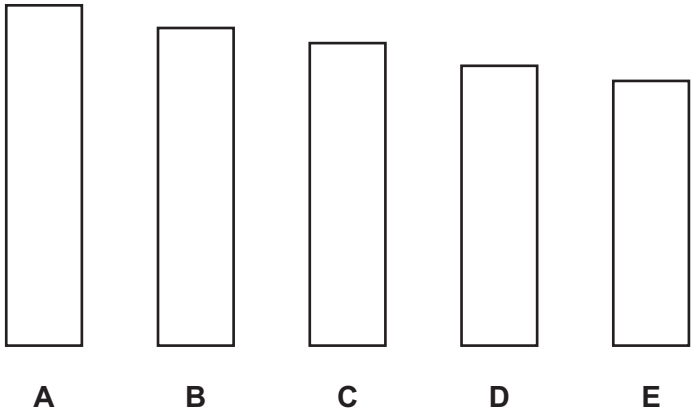



**Figure 1.1**

Measure the lengths of the potato cylinders shown in Figure 1.1.

Prepare a table and record your measurements in your table.

[4]

© Cambridge University Press & Assessment 2026 

**(iii)** Calculate the change in length for each potato cylinder, using the formula:

change in length = final length - starting length

potato cylinder **A** .....

potato cylinder **B** .....

potato cylinder **C** .....

potato cylinder **D** .....

potato cylinder **E** .....

[1]

**(iv)** Suggest which concentration of salt solution is closest to the concentration of solutes in the potato cells.

..... [1]

**(v)** State the independent variable in this investigation.

..... [1]

**(vi)** State **two** variables that were kept constant in this investigation.

1 .....

.....

2 .....

.....

[2]

**(vii)** Suggest **two** improvements to the method used in this investigation.

1 .....

.....

2 .....

.....

[2]

© Cambridge University Press & Assessment 2026 

**(viii)** Identify **one** hazard in **step 3** and describe an appropriate safety precaution.

hazard .....

.....

safety precaution .....

.....

.....

[2]

**(b)** Potatoes contain starch.

View solution

State the result of a positive test for starch.

..... [1]

[Total: 15]

© Cambridge University Press & Assessment 2026 

**Turn over**

© Cambridge University Press & Assessment 2026 

**2** **(a)** Figure 2.1 is a photomicrograph of the smallest bone in the human body.

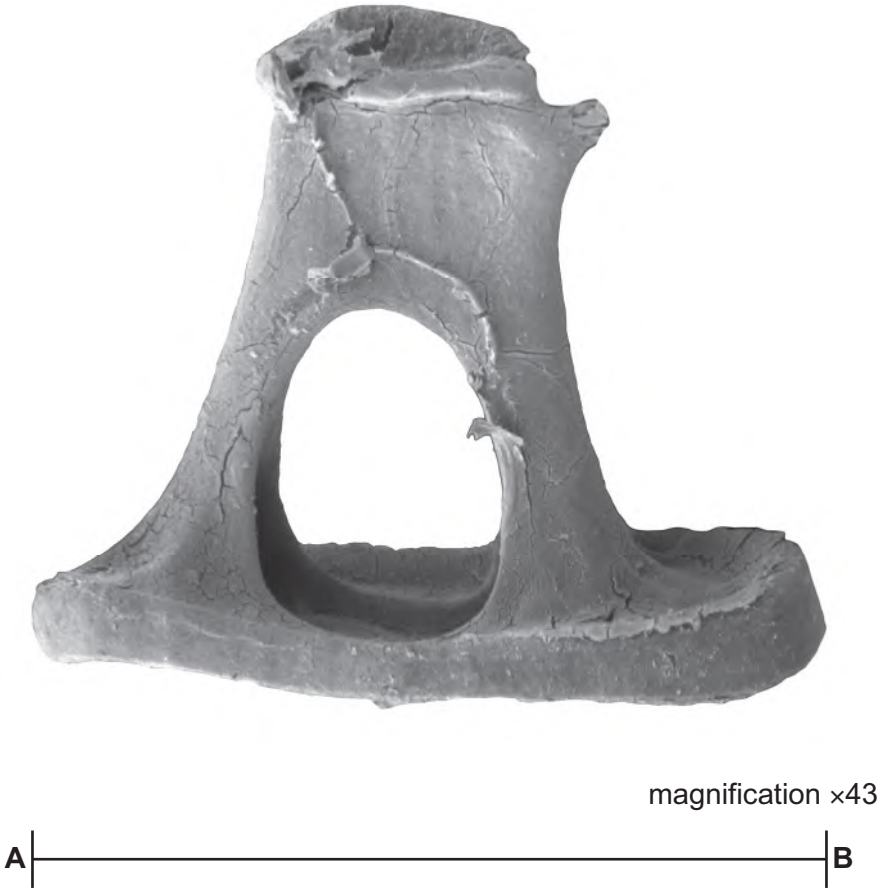



**Figure 2.1**

© Cambridge University Press & Assessment 2026 

**(i)** Draw a large diagram of the bone shown in Figure 2.1.

View solution

[4]

**(ii)** Line **AB** represents the width of the bone.

View solution

Measure the length of line **AB** in Figure 2.1.

length of line **AB** ..... mm

Calculate the actual width of the bone, using the formula and your measurement.

$$\text{magnification} = \frac{\text{length of line } \mathbf{AB} \text{ in Figure 2.1}}{\text{actual width of the bone}}$$

Give your answer to **two** significant figures.

Space for working.

..... mm

[3]

© Cambridge University Press & Assessment 2026 

**(b) (i)** Milk is a liquid food that contains fat.

View solution

The enzyme lipase catalyses the breakdown of the fat in milk into fatty acids and glycerol.

As the concentration of fatty acids increases, the pH of the milk decreases.

Plan an investigation to determine how temperature affects the activity of lipase.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....[6]

© Cambridge University Press & Assessment 2026 

**(ii)** Milk also contains protein.

State the name of the solution needed to test for protein.

View solution

..... [1]

[Total: 14]

© Cambridge University Press & Assessment 2026 

**3 (a)** Snake's-head fritillary, *Fritillaria meleagris*, is a rare plant found in wet meadows.

Figure 3.1 is a photograph of part of a snake's-head fritillary plant.



**Figure 3.1**

Scientists first discovered a single snake's-head fritillary plant in a meadow in 1925.

They counted the number of snake's-head fritillary plants in the meadow over a number of years.

Table 3.1 shows the scientists' data.

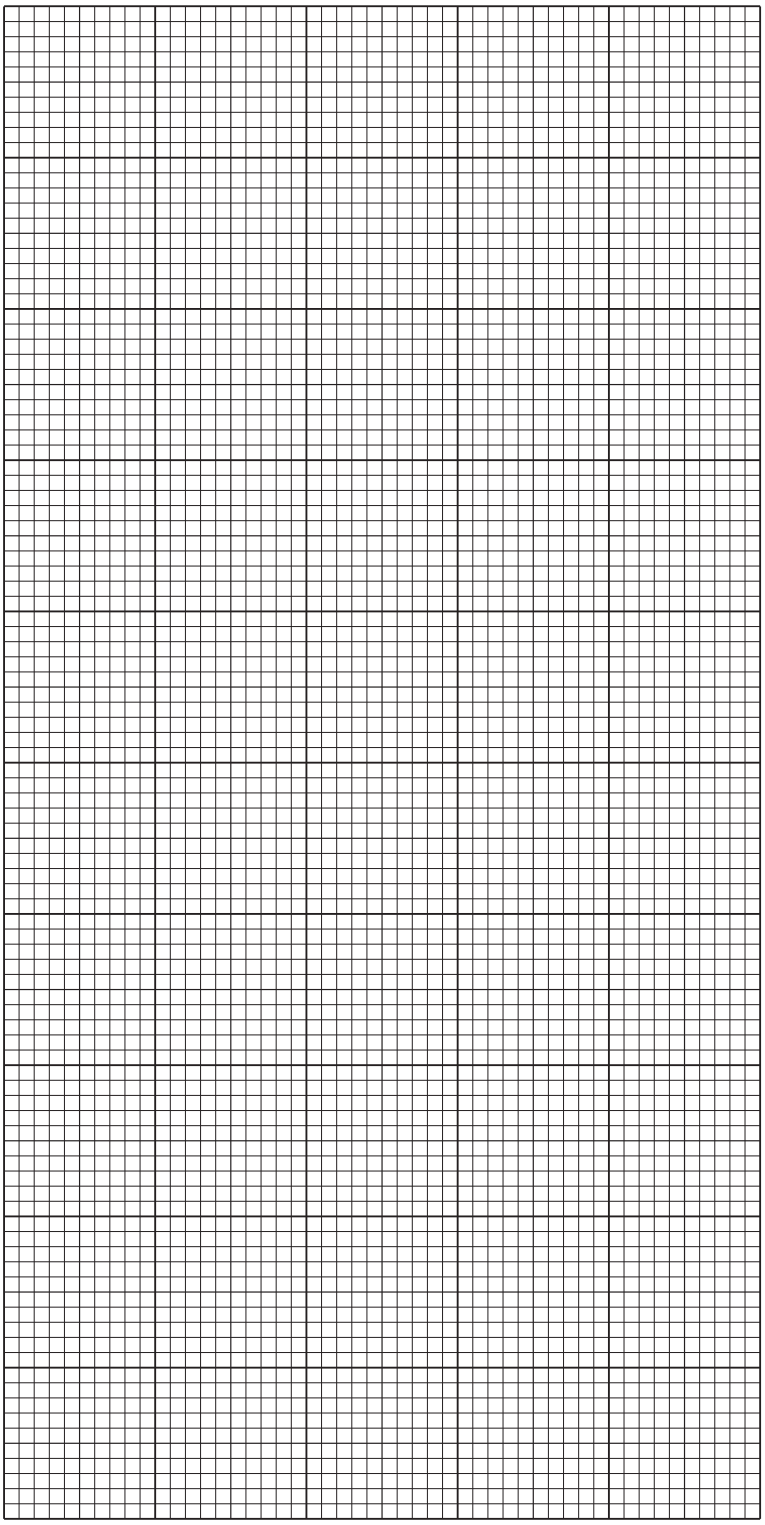
**Table 3.1**

| time after the snake's-head fritillary plant was first discovered / years | number of snake's-head fritillary plants counted |
|---|---|
| 36 | 10 |
| 49 | 30 |
| 60 | 50 |
| 68 | 110 |
| 80 | 950 |
| 92 | 725 |
| 99 | 740 |

© Cambridge University Press & Assessment 2026 

**(i)** Plot a line graph on the grid of the data in Table 3.1.

View solution



[4]

© Cambridge University Press & Assessment 2026 

**(ii)** Describe how the number of plants shown in your graph changes over time.

.....

.....

.....

.....

..... [2]

**(iii)** State the dependent variable in this investigation.

..... [1]

© Cambridge University Press & Assessment 2026 

**(b) (i)** A student wanted to estimate the number of snake's-head fritillary plants in a meadow.

- Using simple random sampling, the student counted 9 snake's-head fritillary plants in an area of the meadow that was 40 $m^2$.

  Calculate the mean number of snake's-head fritillary plants per $m^2$.

View solution

..... per $m^2$

- The meadow was rectangular shaped with a length of 300 m and a width of 1100 m.

  Calculate the area of the meadow.

..... $m^2$

- Estimate the number of snake's-head fritillary plants in the whole meadow.

..... plants
[3]

**(ii)** Suggest why the student counted a sample of plants rather than counting all of the snake's-head fritillary plants in the meadow.

View solution

.....

.....

..... [1]

[Total: 11]

© Cambridge University Press & Assessment 2026 

**BLANK PAGE**

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (Cambridge University Press & Assessment) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced online in our Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download at www.cambridgeinternational.org after the live examination series.

Cambridge International Education is the name of our awarding body and a part of Cambridge University Press & Assessment, which is a department of the University of Cambridge.

© Cambridge University Press & Assessment 2026 