

Surname	Centre Number	Candidate Number
First name(s)		0



GCSE



S24-3400U30-1B

MONDAY, 8 JANUARY – FRIDAY, 9 FEBRUARY 2024

BIOLOGY – Unit 3 (3400U30)

PRACTICAL ASSESSMENT

INVESTIGATING THE EFFECT OF TEMPERATURE
ON CELL MEMBRANES

SECTION B

1 hour

For Examiner's use only		
	Maximum Mark	Mark Awarded
Section B	24	

ADDITIONAL MATERIALSA calculator and your Section **A** exam paper.**INSTRUCTIONS TO CANDIDATES**

Use black ink or black ball-point pen. Do not use gel pen or correction fluid.

You may use a pencil for graphs and diagrams only.

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** questions.

Write your answers in the spaces provided in this booklet. If you run out of space, use the additional page(s) at the back of the booklet, taking care to number the question(s) correctly.

INFORMATION FOR CANDIDATES

The total number of marks available for this section of the task is 24.

The number of marks is given in brackets at the end of each question or part-question.

This task is in 2 sections, **A** and **B**. You will have completed Section **A** in a previous lesson.

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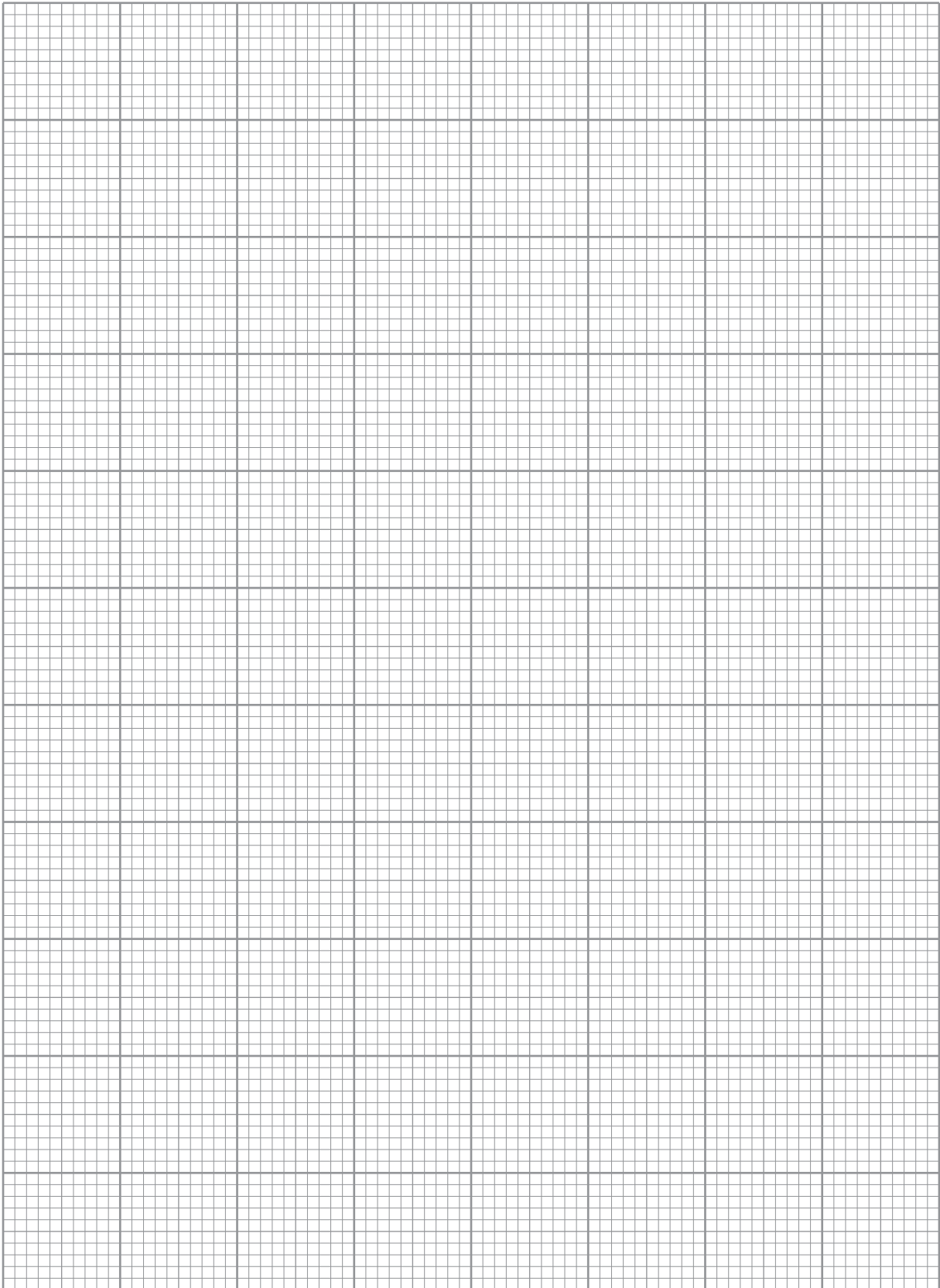
SECTION BAnswer **all** questions.

2. (a) (i) State the independent variable in this experiment. [1]
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- (ii) State the range of the independent variable. [1]
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- (iii) State the dependent variable in this experiment. [1]
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- (b) Use your results from Section **A** to draw a graph of betalain concentration (vertical axis) against temperature (horizontal axis) on the grid opposite. Include a plot at (0,0). [5]



Examiner
only

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- (c) (i) Use your graph to describe the relationship between temperature and betalain concentration in the water. [1]

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- (ii) Suggest a value for the concentration of betalain in the water at 35°C. [2]
Show on your graph how you arrived at this result.

concentration of betalain = µg/g

- (d) State what is meant by a random error. [2]
 Suggest how the effect of random errors may be reduced.

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- (e) Complete the table below by stating **two** sources of inaccuracy and suggest an improvement for each. [4]

Source of inaccuracy	Improvement



- (f) When you trim the beetroot cylinders, the betalain begins to leak out straight away. Use your knowledge of plant cell structure to suggest where the betalain must be located **and** explain why the betalain leaks out. [3]

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- (g) Plan an experiment to investigate how the surface area of the beetroot could affect how much betalain leaks out into the water. Include a prediction in your answer. You do not need to carry out this experiment. [4]

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