Surname	Centre Number	Candidate Number
First name(s)		0

GCSE

S25-3400U30-1D

MONDAY, 6 JANUARY – FRIDAY, 21 FEBRUARY 2025

BIOLOGY – Unit 3 (3400U30)

PRACTICAL ASSESSMENT

INVESTIGATING THE EFFECT OF GLUCOSE CONCENTRATION WHEN TESTING FOR DIABETES

SECTION B

1 hour

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

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ADDITIONAL MATERIALS

A 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 B

Answer **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 resolution of the stopwatch. [1]

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(iv) The temperature of the water in the beaker and the concentration of the Benedict's solution were controlled variables in this experiment.

Complete the table below by stating **two** other controlled variables in this experiment **and** describe how each was controlled. [4]

Controlled variable	How it was controlled

(b) Use your results from Section **A** to draw a graph of the time taken for the solution to turn orange / brick red (vertical axis) against the glucose concentration (horizontal axis) on the grid opposite. [5]

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(c) Use your graph to describe the relationship between the glucose concentration and the time taken for the solution to turn orange / brick red. [1]

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(d) Complete the table below by stating **two** inaccuracies in the experiment **and** suggest an improvement for each. [4]

Inaccuracy	Improvement

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(e) Dawn and Julie carry out the same investigation.
They record the time taken for the solution to turn orange / brick red.
Dawn and Julie repeat their experiment and then compare their results with two other groups (Group A and Group B).

Glucose concentration (%)	Time taken for the solution to turn orange / brick red (s)								
	Dawn and Julie			Group A			Group B		
	Trial 1	Trial 2	Mean	Trial 1	Trial 2	Mean	Trial 1	Trial 2	Mean
10	454	450	452	502	502	502	488	490	489
20	412	416	414	482	486	484	444	446	445
30	389	389	389	450	454	452	412	410	411
40	338	334	336	412	410	411	386	380	383
50	318	316	317	389	385	387	354	350	352

(i) Dawn and Julie conclude that there is good repeatability in their own results.
Explain how their data supports this. [2]

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(ii) Evaluate the reproducibility of the data. [2]

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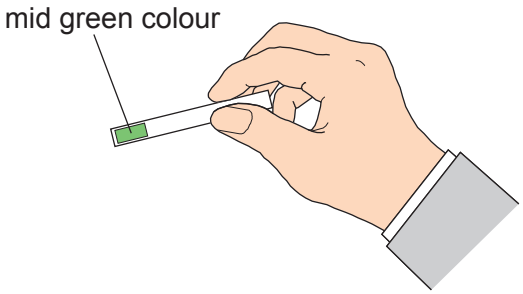
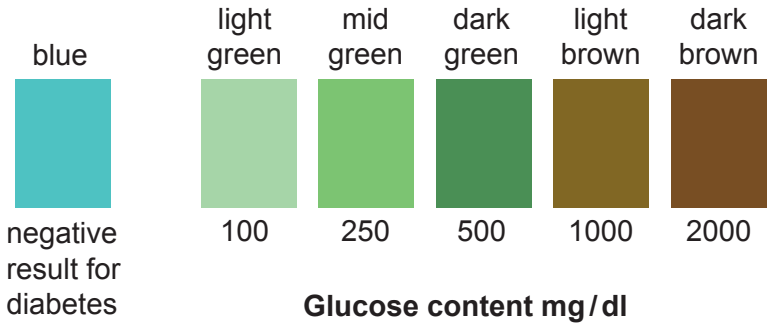
(f) Oliver is always thirsty and urinates frequently.
His doctor uses Diastix to test Oliver's urine to diagnose diabetes.
Oliver's Diastix results are shown below.



(i) The doctor compares Oliver's Diastix strip to the scale below.



The scale above estimates glucose content in milligrams per decilitre (dl).
State the conclusion that the doctor reached following Oliver's Diastix test.
Explain your answer. [2]

.....

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.....

(ii) Use Oliver's Diastix result to calculate the glucose content of Oliver's urine in milligrams per litre (mg / l).
1 decilitre (dl) = 0.1 litres (l) [1]

glucose content = ... mg / l

END OF PAPER

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Question number	Additional page, if required. Write the question number(s) in the left-hand margin.

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