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| Surname       | Centre Number | Candidate Number |
| First name(s) |               | 2                |



**GCE A LEVEL**

1420U50-1A



**WEDNESDAY, 2 APRIL 2025**

**PHYSICS – A2 unit 5**  
**Practical Examination**

**Experimental Task**  
**TEST 1**

1 hour 30 minutes

| For Teacher's use only                           |  |
|--------------------------------------------------|--|
| Award a mark of 0 or 1 for each of the following |  |
| Risk assessment correct – (a)(ii)                |  |
| Measuring outer diameter – (d)(i)                |  |

| For Examiner's use only |  |
|-------------------------|--|
| Mark awarded            |  |
| <b>Total</b>            |  |

**ADDITIONAL MATERIALS**

A calculator and a **Data Booklet**.

**INSTRUCTIONS TO CANDIDATES**

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

Pencil may be used to draw tables and graphs.

Answer **all** questions.

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

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**

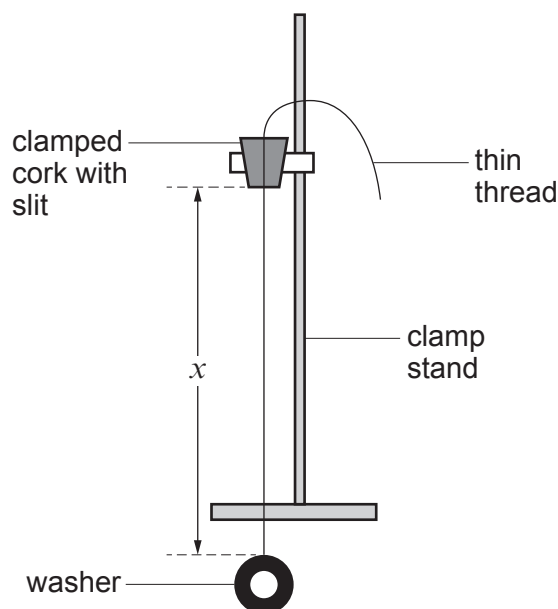
The total number of marks available for this task is 25.

Your teacher will directly assess your practical skills in parts (a)(ii) **and** (d)(i).

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

Answer **all** questions.

In this investigation you will determine how the period,  $T$ , varies with length,  $x$ , for a large washer suspended from a thread. At a later stage, you will also determine the outer diameter of the washer.



The period,  $T$ , is expected to be linked to the length,  $x$ , by the equation:

$$T = kx^n$$

where  $k$  and  $n$  are constants.

- (a) (i) Write a plan of how you will carry out this investigation.  
Include:
- a description of the graph you will draw to determine  $n$ ;
  - trial readings.

[6]

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(ii) Provide a risk assessment for your investigation.

[1]

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- (c) (i) Plot a suitable graph to determine a value for  $n$ . **Error bars are not required on the graph.**

[4]

Examiner  
only

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- (ii) Use your graph to determine a value for  $n$ . You are not required to calculate any uncertainties. [3]

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- (iii) The equation for the period of a simple pendulum is  $T = 2\pi\sqrt{\frac{l}{g}}$  where  $g$  is the acceleration due to gravity and  $l$  is the length of the pendulum.

Compare your value for  $n$  with the value expected from the relationship for a simple pendulum. [1]

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- (d) (i) Using a suitable measuring instrument, determine the **mean** outer diameter of the washer with its **absolute** uncertainty. [3]

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- (ii) The manufacturer's data for the washer states that its outer diameter is 37.1 mm with a percentage uncertainty of  $\pm 0.3\%$ . Comment on whether your result is consistent with the manufacturer's data. [2]

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**END OF PAPER**



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