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PHYSICS**0625/52**

Paper 5 Practical Test

February/March 2026**1 hour 15 minutes**

You must answer on the question paper.

You will need: The materials and apparatus listed in the confidential instructions

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 [].

For Examiner's Use

1	
2	
3	
4	
Total	

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

1 In this experiment, you will determine the density of a glass ball.

- (a) (i) • Pour water into a measuring cylinder until it is approximately half full.
 • Place the measuring cylinder of water on the top-pan balance.
 • Record the combined mass m_1 of the measuring cylinder and water.

Give your answer to the nearest gram.

$$m_1 = \dots\dots\dots \text{ g [1]}$$

- (ii) Describe **one** technique for using a top-pan balance to measure the mass of the measuring cylinder and water to ensure an accurate reading.

.....
 [1]

- (iii) Measure the volume V_1 of water in the measuring cylinder.

$$V_1 = \dots\dots\dots \text{ cm}^3 \text{ [1]}$$

- (iv) Describe **one** technique for using a measuring cylinder to measure the volume of the water to ensure an accurate reading.

.....
 [1]

- (b) Place five glass balls into the water in the measuring cylinder, ensuring no water splashes out.

- (i) Measure the mass m_2 of the measuring cylinder, water and five glass balls.

$$m_2 = \dots\dots\dots \text{ g [1]}$$

- (ii) Calculate the mass m of one glass ball.

$$m = \dots\dots\dots \text{ g [1]}$$

- (iii) Measure the volume V_2 of the water and five glass balls.

$$V_2 = \dots\dots\dots \text{ cm}^3 \text{ [1]}$$



(iv) Calculate the volume V of one glass ball.

$$V = \dots\dots\dots \text{cm}^3 \quad [1]$$

(v) Calculate the density ρ of a glass ball. Use your values from **1(b)(ii)** and **1(b)(iv)** and the equation shown.

$$\rho = \frac{m}{V}$$

$$\rho = \dots\dots\dots \text{g/cm}^3 \quad [1]$$

(c) Suggest **two** improvements that will help a student to determine a more accurate value for the volume of a glass ball.

- 1
-
- 2
-

[2]

[Total: 11]



- 2 In this experiment, you will investigate the behaviour of a spring.

A clamp stand and spring have been set up for you. Refer to Figure 2.1.

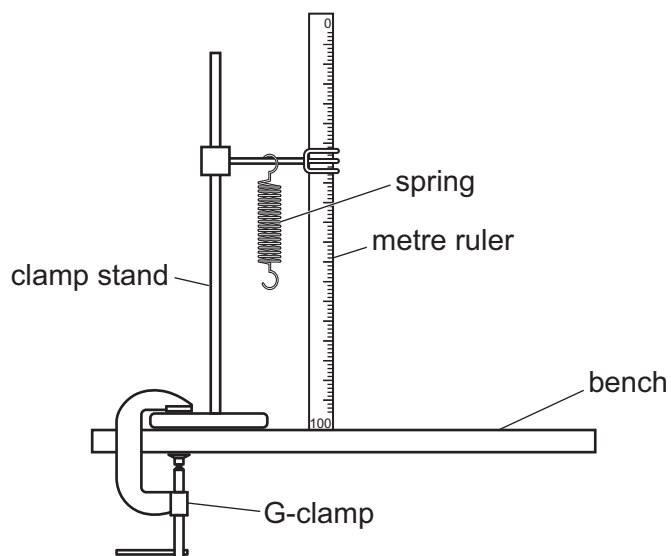


Figure 2.1

- (a) (i) Measure the initial length l_0 of the spring with no load. Give your answer to the nearest mm.

Do **not** include the loops at the ends of the spring in your measurement.

l_0 mm [1]



- (ii) Draw a diagram of the spring and show clearly the length l_0 .

The diagram does **not** need to be drawn to scale.

[1]

- (iii) Describe **two** techniques that you use when measuring the length of the spring to ensure an accurate reading.

You may draw a diagram.

1

.....

2

.....

[2]





- (b)
- Suspend a load $L = 1.0\text{ N}$ from the spring.
 - Record the new length l of the spring in Table 2.1.
 - Calculate the extension x of the spring using the equation $x = l - l_0$.
 - Record the value of x in Table 2.1.
 - Repeat the procedure using loads $L = 2.0\text{ N}$, 3.0 N , 4.0 N and 5.0 N .

Table 2.1

L/N	l/mm	x/mm
1.0		
2.0		
3.0		
4.0		
5.0		

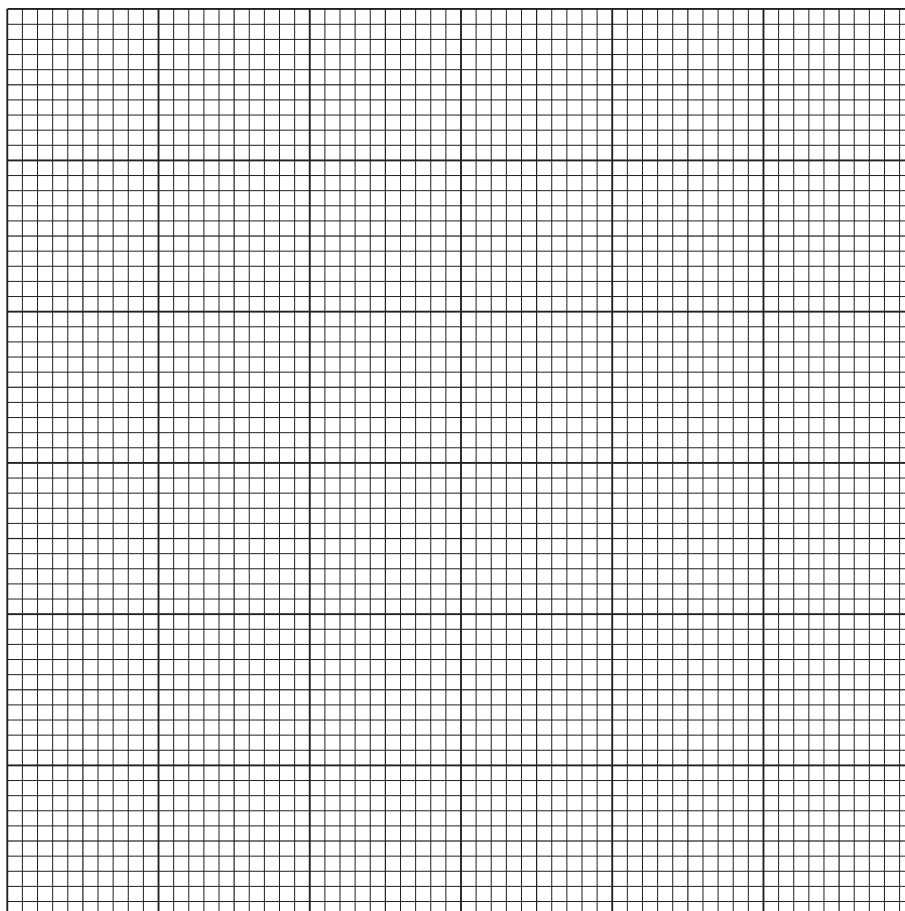
[2]



(c) (i) Plot a graph of L/N (y -axis) against x/mm (x -axis).

Start the axes from the origin $(0, 0)$.

Draw a best-fit line.



[4]

(ii) State and explain if your line shows L and x are directly proportional.

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

[Total: 11]



3 In this experiment, you will investigate circuits containing different combinations of resistors.

(a) (i) Circuit 1 has been set up for you.

Refer to Figure 3.1.

Circuit 1.

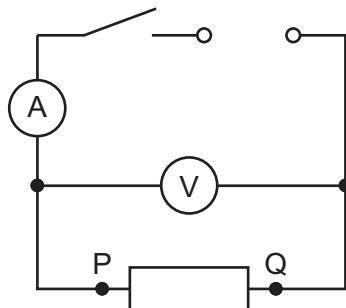


Figure 3.1

Circuit 1 contains one resistor of resistance $X\Omega$.

Using circuit 1:

- Close the switch.
- Record in Table 3.1, the potential difference (p.d.) V across the resistor.
- Record in Table 3.1, the current I in the circuit.
- Open the switch.

Complete the table headings in Table 3.1 by inserting the missing units.

Table 3.1

circuit	$V/...$	$I/...$	R/Ω
1			
2			
4			

[1]



- (ii) Disconnect the single resistor from P and Q.

Connect the resistor network Y to P and Q to form circuit 2.

Figure 3.2 shows the completed circuit 2.

Circuit 2.

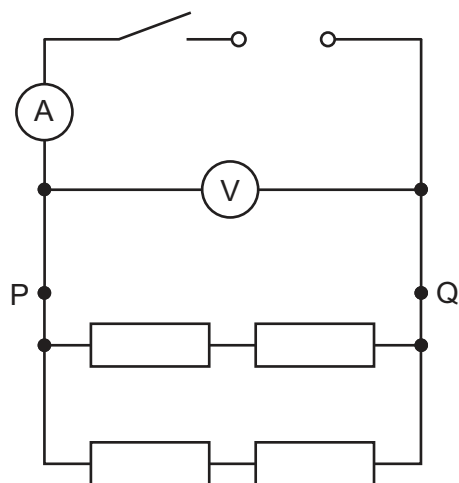


Figure 3.2

Circuit 2 contains four identical resistors each of resistance $X\Omega$.

Using circuit 2:

- Close the switch.
- Measure, and record in Table 3.1, the potential difference (p.d.) V across the combination of 4 resistors.
- Measure, and record in Table 3.1, the current I in the circuit.
- Open the switch.

[1]

- (iii) Calculate, and record in Table 3.1, the resistance R of circuits 1 and 2.

Use your readings from Table 3.1 and the equation shown.

$$R = \frac{V}{I}$$

[2]

- (iv) Theory states that the resistance of circuit 1 and circuit 2 are the same.

State whether your results support this statement. Justify your statement by reference to values from your results.

statement

justification

[2]

- (v) Figure 3.3 shows circuit 3. Do **not** build circuit 3.

Circuit 3.

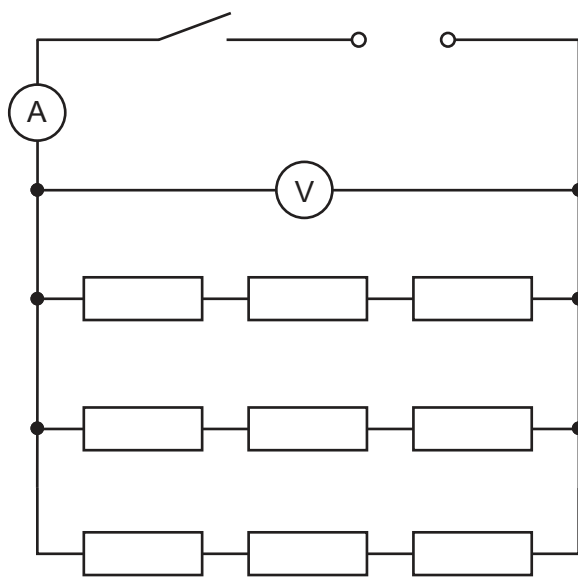


Figure 3.3

Circuit 3 has **not** been set up for you.

Circuit 3 contains nine identical resistors each of resistance $X \Omega$.

Predict the resistance of this combination of resistors.

..... Ω [1]



- (b) (i) Disconnect the resistor network Y from P and Q.

Connect the resistor network Z to P and Q to form circuit 4.

Complete Figure 3.4 to show circuit 4.

Circuit 4.

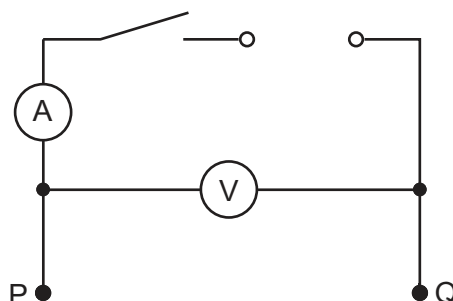


Figure 3.4

[2]

- (ii)
- Close the switch.
 - Measure, and record in Table 3.1, the potential difference (p.d.) V on the voltmeter.
 - Measure, and record in Table 3.1, the current I in the circuit.
 - Open the switch.

[1]

- (c) Suggest why the switch is opened after readings are taken.

.....

..... [1]

[Total: 11]



- 4 A student investigates the rate of cooling of hot water in a container which has a lid.

Plan an experiment which enables the student to investigate the effect of different starting temperatures on the rate of cooling.

The apparatus available includes:

- a beaker
- a measuring cylinder
- a supply of hot water
- a lid

You are **not** required to do this investigation.

In your plan:

- state any additional apparatus required
- explain briefly how to do the investigation
- state the key variables to keep constant
- draw a table, or tables, with column headings, to show how to display your readings (you are **not** required to enter any readings in the table)
- explain how to use your readings to reach a conclusion.





[7]







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