Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME										
CENTRE NUMBER						CANDIDATE NUMBER				

6498998425

PHYSICS **0625/52**

Paper 5 Practical Test **May/June 2016**

1 hour 15 minutes

Candidates answer on the Question Paper.

Additional Materials: As listed in the Confidential Instructions.

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name in the spaces at the top of the page.
Write in dark blue or black pen.
You may use an HB pencil for any diagrams or graphs.
Do not use staples, paper clips, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.
You are advised to spend about 20 minutes on each of questions 1 to 3, and 15 minutes on question 4.
Electronic calculators may be used.
You may lose marks if you do not show your working or if you do not use appropriate units.

At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.

For Examiner's Use	
1	
2	
3	
4	
Total	

The syllabus is approved for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

This document consists of **11** printed pages and **5** blank pages.

DC (ST/CGW) 108858/4

CAMBRIDGE International Examinations

[Turn over

1 In this experiment, you will investigate the stretching of a spring.

Carry out the following instructions, referring to Fig. 1.1.

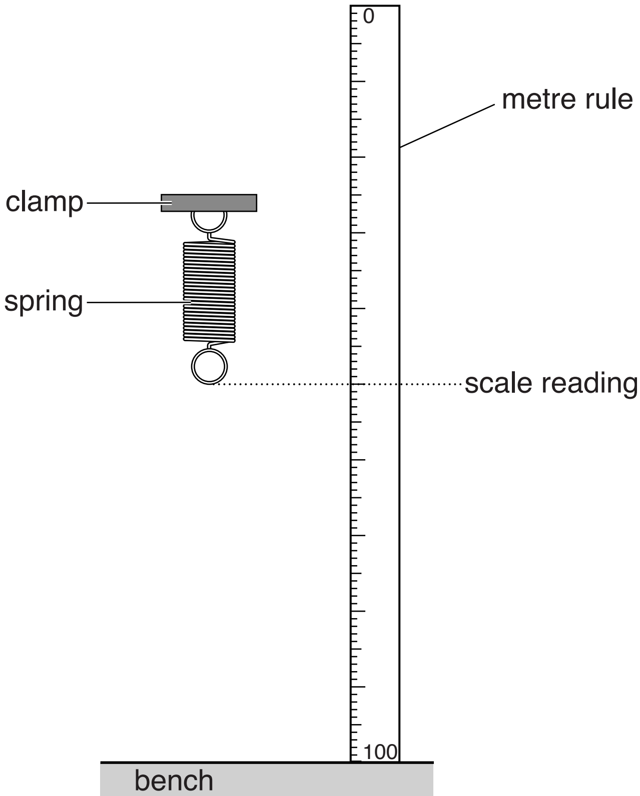

Fig. 1.1

(a) • Record the scale reading S_0 on the metre rule at the level of the bottom of the spring, as shown in Fig. 1.1.

S_0 = ... mm

• Hang a load L of 1.0 N on the spring. Record, in Table 1.1, the scale reading S on the metre rule at the level of the bottom of the spring.

• Calculate the extension e of the spring using the equation $e = (S - S_0)$. Record the value of e in the table.

• Repeat the procedure using loads L of 2.0 N, 3.0 N, 4.0 N and 5.0 N. Record all the readings and results in the table.

Table 1.1

L/N	S/mm	e/mm
0.0		0
1.0		
2.0		
3.0		
4.0		
5.0		

[3]

(b) Explain briefly one precaution that you took in order to obtain reliable readings.

....

....[1]

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

[4]

(d) • Remove the loads from the spring. Hang the load **X** on the spring.

• Record the scale reading S_X on the metre rule at the level of the bottom of the spring.

S_X = ... mm

• Calculate the extension e of the spring using the equation $e = (S_X - S_0)$.

e = ... mm

• Use the graph to determine the weight W of the load **X**. Show clearly on the graph how you obtained the necessary information.

W = ...

[3]

[Total: 11]

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2 In this experiment, you will investigate the cooling of water.

Carry out the following instructions, referring to Fig. 2.1.

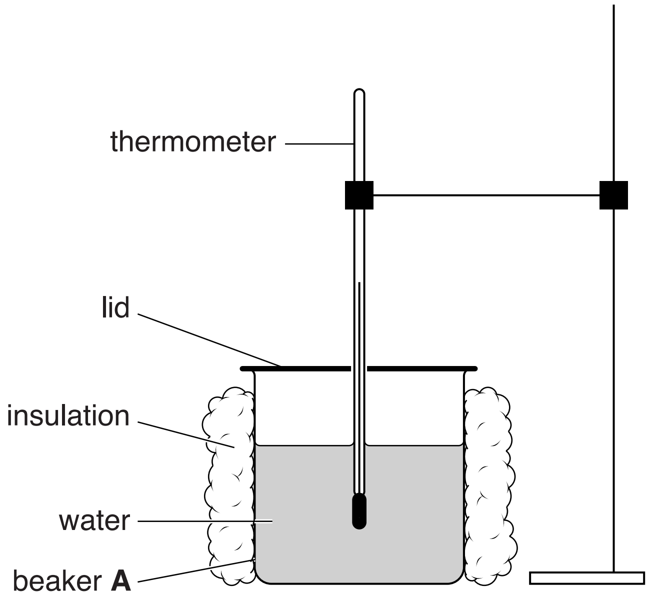

Fig. 2.1

(a)
- Pour 200 cm^3 of hot water into beaker **A**. Place the thermometer in beaker **A**, as shown in Fig. 2.1, with the lid covering the top of the beaker. This beaker is insulated and has a lid.
- Measure the temperature θ of the hot water in beaker **A**. Record this temperature in Table 2.1 at time $t = 0$ s.
- Immediately start the stopclock.
- After 30 s, measure the temperature θ shown on the thermometer. Record the temperature in the table.
- Continue recording the temperature every 30 s until you have six sets of readings.
- Repeat the procedure using beaker **B**. This beaker is insulated but has no lid.
- Repeat the procedure using beaker **C**. This beaker has a lid but no insulation.

Table 2.1

	beaker **A** insulation and lid	beaker **B** insulation, no lid	beaker **C** lid, no insulation
t/s	θ/	θ/	θ/
0			
30			
60			
90			
120			
150			

[4]

(b) Complete the column headings in the table. [1]

(c) **(i)** Tick the statement that best describes the results of your experiment.

☐ Removing the lid speeds up the cooling significantly more than removing the insulation.

☐ Removing the insulation speeds up the cooling significantly more than removing the lid.

☐ There is no significant difference between removing the lid and removing the insulation.

[1]

(ii) Justify your answer by reference to your readings.

....

....

....[1]

(d) State two of the conditions that should be kept the same in this experiment in order for the comparison to be fair.

1. ....

....

2. ....

....

[2]

(e) Describe briefly how a measuring cylinder is read to obtain a reliable value for the volume of water. You may draw a diagram.

....

....

....

....[2]

[Total: 11]

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3 In this experiment, you will investigate the magnification of images produced by a lens.

Carry out the following instructions, referring to Fig. 3.1.

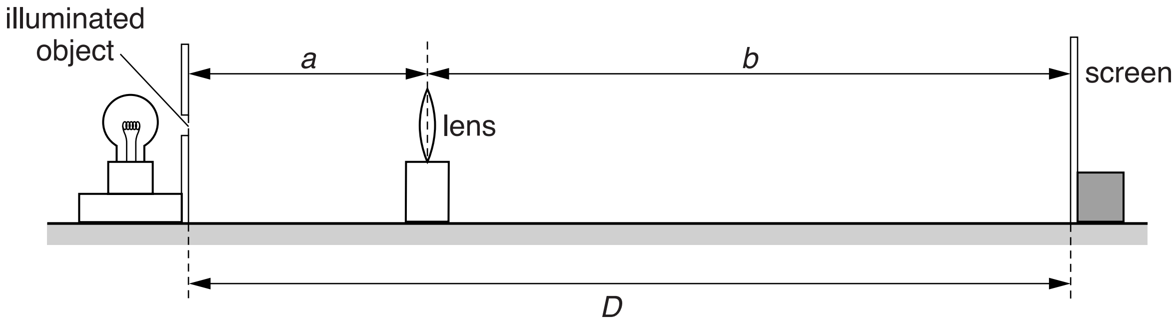

Fig. 3.1

Place the screen at a distance D = 80.0 cm from the illuminated object. **The screen and the illuminated object must remain in the same positions throughout the experiment.**

(a) (i)
- Place the lens close to the illuminated object.
- Move the lens until a sharply focused, **enlarged** image of the object is seen on the screen.
- Measure and record the distance a from the illuminated object to the centre of the lens.

a = ...cm

- Measure and record the distance b from the centre of the lens to the screen.

b = ...cm [2]

(ii) Calculate the magnification m_1 of the image, using the equation $m_1 = \frac{b}{a}$.

m_1 = ... [1]

(iii) Measure and record the height h_1 from the top to the bottom of the image on the screen.

h_1 = ... cm [1]

(b) **(i)** Move the lens towards the screen until a **smaller**, sharply focused image of the object is seen on the screen.

- Measure and record the distance x from the illuminated object to the centre of the lens.

x = ...cm

- Measure and record the distance y from the centre of the lens to the screen.

y = ... cm
[1]

(ii) • Calculate the magnification m_2 of the image, using the equation $m_2 = \frac{y}{x}$.

m_2 = ...

- Measure and record the height h_2 from the top to the bottom of the image on the screen.

h_2 = ...cm
[2]

(c) A student suggests that $m_1 \times m_2$ should equal 1.

State whether your results support this suggestion. Justify your answer by reference to your results.

statement ....

justification ....

....
[2]

(d) State two precautions that you would take in this experiment to obtain reliable results.

1. ....

....

2. ....

....
[2]

[Total: 11]

4 A student is investigating how the resistance of a wire depends on the length of the wire. The student aims to plot a graph.

The following apparatus is available to the student:

ammeter
voltmeter
power supply
variable resistor
switch
connecting leads
resistance wires of different lengths
metre rule.

Plan an experiment to investigate how the resistance of a wire depends on the length of the wire. You are **not** required to carry out this investigation.

You should

- draw a diagram of the circuit you could use to determine the resistance of each wire
- explain briefly how you would carry out the investigation
- suggest suitable lengths of wire
- state the key variables that you would control
- draw a table, or tables, with column headings to show how you would display your readings. You are not required to enter any readings in the table.

....[7]

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[Total: 7]

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