Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME	
CENTRE NUMBER	
CANDIDATE NUMBER	

7131906396

PHYSICS **0625/52**

Paper 5 Practical Test **February/March 2017**

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 about 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 **1** blank page.

DC (NH/FD) 125966/8
© UCLES 2017

CAMBRIDGE International Examinations

[Turn over

1 In this experiment, you will investigate how the surrounding temperature affects the rate at which water cools.

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

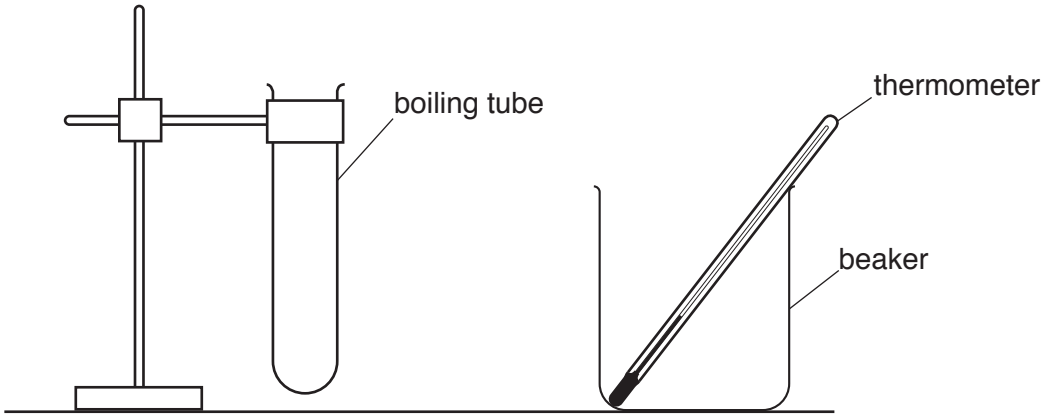


Fig. 1.1

(a) (i) • Pour 200 cm^3 of cold water into the beaker.

• Record the temperature θ_1 of the water in the beaker.

θ_1 = ...[1]

(ii) • Pour hot water into the boiling tube until it is about half full. Gently place the thermometer into the boiling tube. Place the boiling tube into the beaker of water.

• Record, in the **first row** of Table 1.1, the temperature θ of the water in the boiling tube and immediately start the stopclock.

• Record, in the table, the temperature θ of the water in the boiling tube at times t = 30 s, 60 s, 90 s, 120 s, 150 s and 180 s. Use the first and second columns. [1]

(b) (i) • Carefully empty the boiling tube and the beaker.

• Pour 150 cm^3 of cold water and 50 cm^3 of hot water **into the beaker**.

• Record the temperature θ_2 of the warm water in the beaker.

θ_2 = ...

• Repeat the steps in **(a)(ii)**, recording the temperature θ of the water in the boiling tube in the third column of the table. [1]

© UCLES 2017

(ii) Complete the heading and the time column in the table. [2]

Table 1.1

		tube in beaker with cold water	tube in beaker with warm water
	t /	θ /	θ /
(first row)	0		

(c) Describe **two** precautions that you took to ensure that the temperature readings were as accurate as possible in the experiment.

1 .....

.....

2 .....

.....

[2]

(d) Write a conclusion stating how increasing the temperature of the surrounding water affects the rate of cooling of the water in the boiling tube.

Justify your answer by reference to your results.

.....

.....

.....

.....[2]

© UCLES 2017

(e) Suggest **one** change to the apparatus or procedure to ensure that the comparison of the effect of surrounding temperature on cooling is a fair test.

Explain why the change is an improvement.

change .....

.....

explanation .....

.....

[2]

[Total: 11]

© UCLES 2017

Question 2 begins on the next page.

2 In this experiment, you will investigate the resistance of three wires **X**, **Y** and **Z**. The circuit has been set up for you.

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

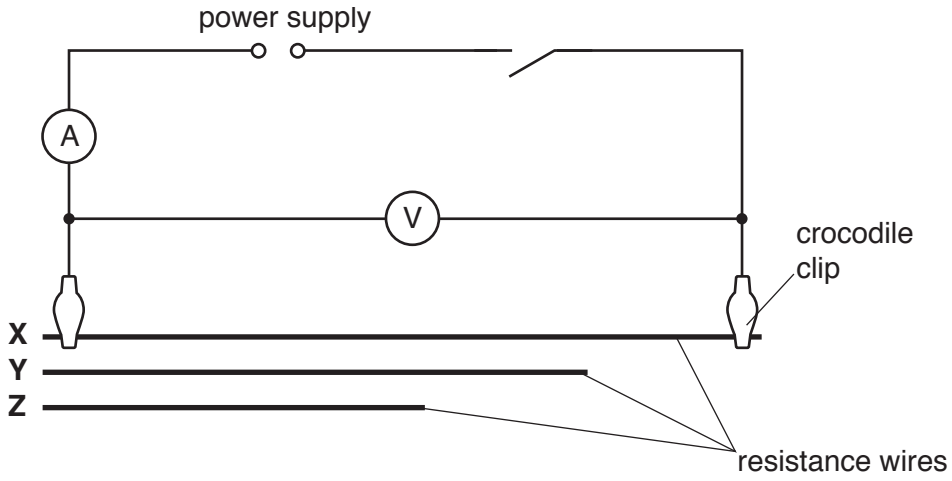


Fig. 2.1

(a) (i)
- Measure and record, in Table 2.1, the length l of resistance wire **X**.
- Switch on.
- Record, in the table, the potential difference V and the current I for wire **X**.
- Switch off.
- Disconnect both crocodile clips from **X** and connect them to the ends of wire **Y**. Record your measurements for l, V and I.
- Take and record measurements for wire **Z**.

Table 2.1

wire	l / m	V / V	I / A	R / Ω
X				
Y				
Z				

[3]

(ii) On Fig. 2.2, draw an arrow (◄——►) to indicate **precisely** between which two points you measured l.

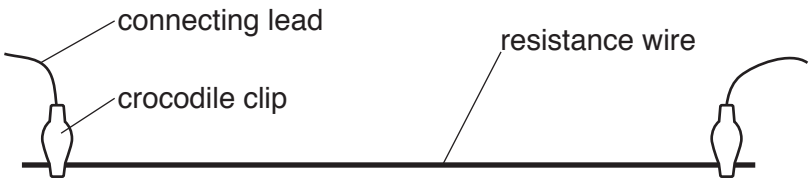


Fig. 2.2

[1]

© UCLES 2017

(b) Calculate, and record in the table, the resistance R of each wire.

Use the equation $R = \frac{V}{I}$.

[2]

(c) **(i)** Calculate the resistance per unit length r of each wire using the equation $r = \frac{R}{l}$.

r for wire **X** = ...

r for wire **Y** = ...

r for wire **Z** = ...

[2]

(ii) A student suggests that r should be the same for each wire.

State whether your results support this suggestion. Justify your statement with reference to your results.

statement .....

justification .....

.....

.....

[2]

(d) One possible problem with this type of experiment is heating of the resistance wires.

Suggest a precaution that could be taken to reduce this.

.....

.....

.....[1]

[Total: 11]

© UCLES 2017

[Turn over

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

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

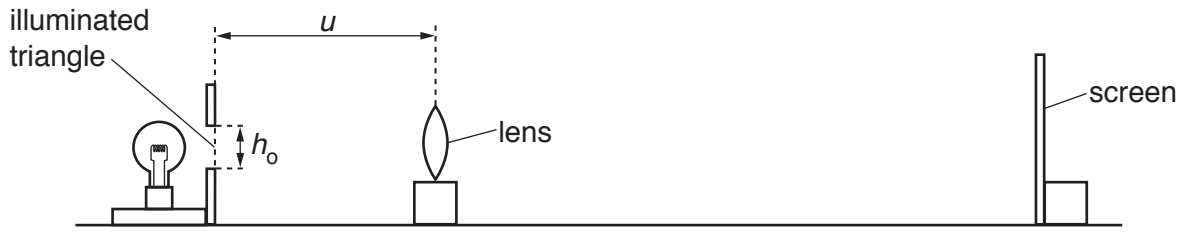


Fig. 3.1

(a) Measure the height h_o of the illuminated triangle, as indicated in Fig. 3.1.

h_o = ...[1]

(b) Arrange the apparatus as shown in Fig. 3.1.

- Set the distance u between the illuminated triangle and the lens to 20.0 cm.
- Place the screen near the lens. Move the screen until a sharp image of the triangle is formed on the screen.
- Measure and record, in Table 3.1, the height h_I of the image formed on the screen.
- Repeat the procedure for values of u = 25.0 cm, 35.0 cm, 45.0 cm and 55.0 cm.

Table 3.1

u / cm	h_I / cm	M
20.0		
25.0		
35.0		
45.0		
55.0		

[1]

(c) Calculate and record, in Table 3.1, a value for the magnification M at each distance of u.

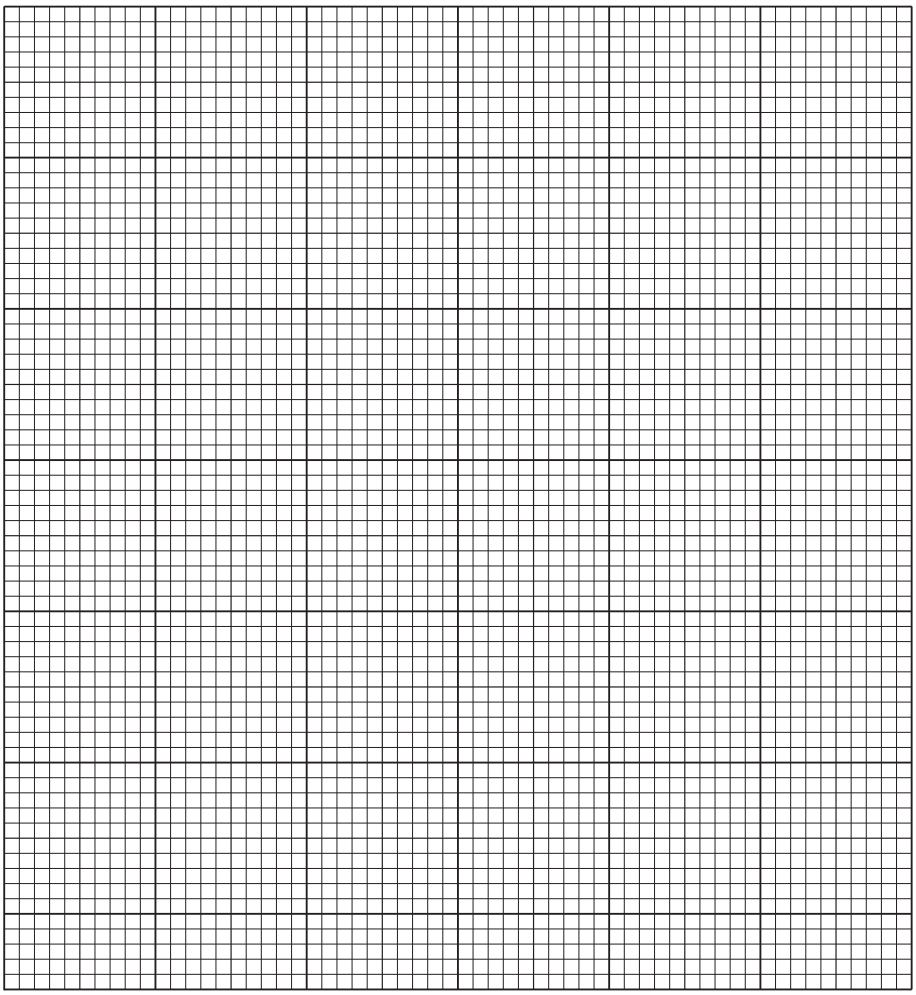
Use your result from **(a)** and the equation

$$M = \frac{h_I}{h_o}.$$

[1]

© UCLES 2017

(d) Plot a graph of M (y-axis) against u / cm (x-axis).



[4]

(e) From your graph, determine the value of u when $M = 1.0$. Show clearly on your graph how you obtained the information.

$u =$ .....[2]

(f) Describe **one** difficulty that might be experienced when measuring the height of the image. Suggest **one** improvement to the apparatus to overcome this.

difficulty .....

.....

improvement .....

.....

[2]

[Total: 11]

4 A student is investigating how the material of a spring affects its behaviour when stretched.

The following apparatus is available to the student:

wires of different thickness, length and material
a set of 10 g masses and a set of 100 g masses, both with hangers
a wooden rod approximately 1 cm in diameter
other standard laboratory equipment.

Plan an experiment which would enable you to test the stretch of springs made from different materials. You are **not** required to carry out the experiment.

In your plan, you should include:

- instructions for making a spring from the wire that is provided,
- what you would measure,
- instructions for carrying out the experiment,
- the variables you would keep the same to ensure the comparison is a fair test,
- any precaution which should be taken or difficulty which might occur,
- how you would present your results.

You may draw a diagram if it helps to explain your plan.

.....

.....

© UCLES 2017

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....[7]

[Total: 7]

BLANK PAGE

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced online in the Cambridge International Examinations Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download at www.cie.org.uk after the live examination series.

Cambridge International Examinations is part of the Cambridge Assessment Group. Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.

© UCLES 2017