

Surname	Centre Number	Candidate Number
First name(s)		2



GCE A LEVEL

1420U50-1B



S24-1420U50-1B

THURSDAY, 25 APRIL 2024

PHYSICS – A2 unit 5
Practical Examination

Experimental Task
TEST 2

1 hour 30 minutes

For Teacher's use only	
Award a mark of 0 or 1 for each of the following	
Description of graph – (a) (i)	
Risk assessment – (a) (ii)	

For Examiner's use only	
Mark awarded	
Total	

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.

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.

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) (i) **and** (ii).

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

You are reminded of the necessity for orderly presentation in your answers.

Answer **all** questions.

You are asked to investigate how the resistance, R , of a wire is affected by its length, l . Resistance and length can be linked by the equation:

$$R = kl^n$$

where k and n are unknown constants.

(a) (i) Write a plan of how you will carry out this investigation.

- Include a description of the graph you will draw to allow you to determine k and n .
- Trial readings need to be included.
- Consider how a zero error might affect your readings. [6]

[6]

(ii) Provide a risk assessment for your investigation.

[1]

Examiner
only

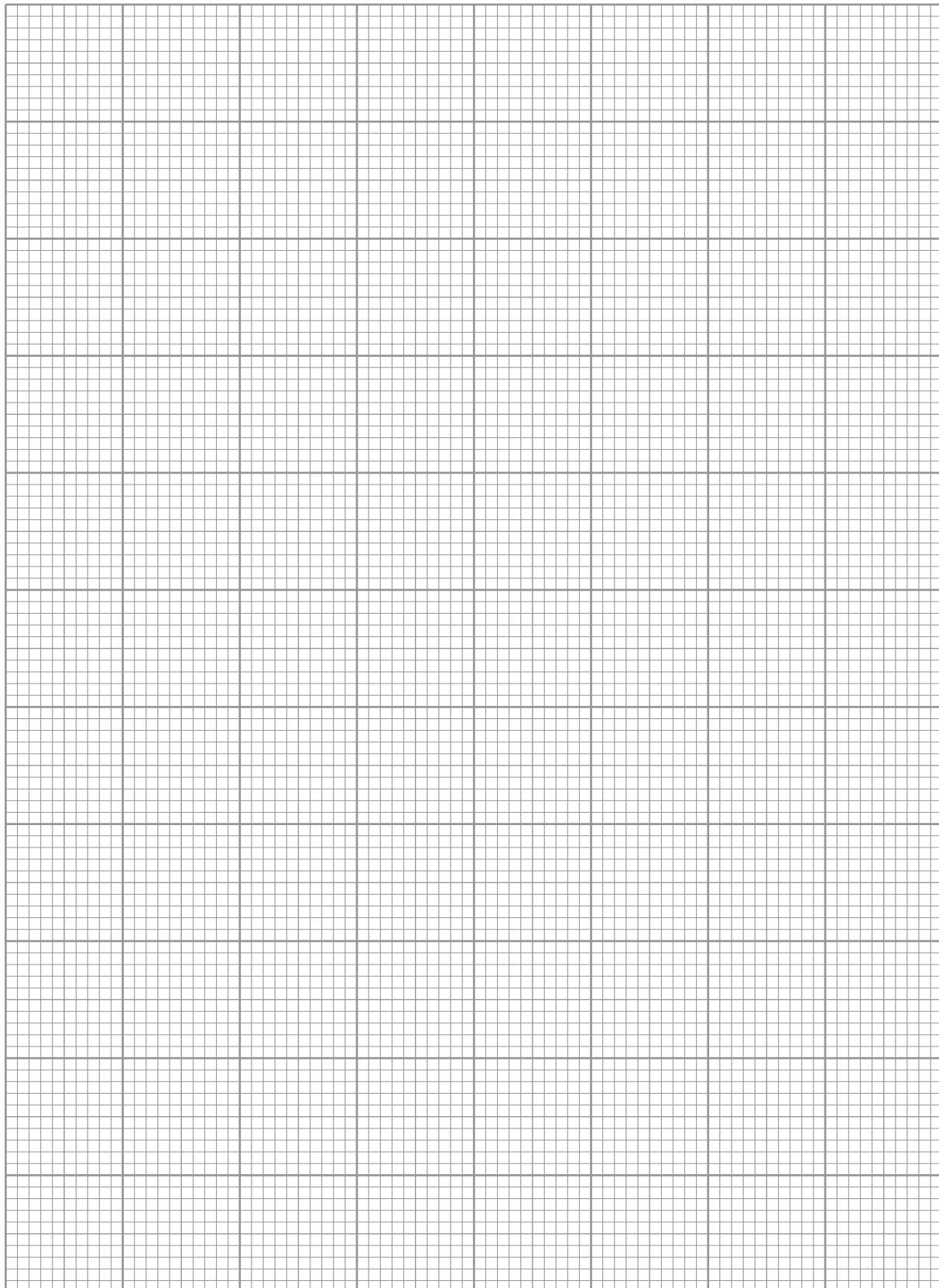
BEFORE MOVING ON TO THE REST OF THE EXPERIMENT PLEASE SHOW YOUR ANSWERS TO PARTS (a)(i) AND (ii) TO YOUR TEACHER.

1420U501B
03

Examiner
only

(b) Use the apparatus available to take sufficient readings to obtain values for k and n . Record your results in a table below. State the resolutions of any measuring instruments used. **Record all lengths in cm.** [5]

(c) (i) Plot your data on a suitable graph to determine values for k and n . **Error bars are not required on the graph.** [4]



(ii) Use your graph to determine values for k and n . **You are not required to calculate any uncertainties.**

Examiner only

[4]

.....
.....
.....
.....
.....
.....
.....
.....

.....
.....
.....
.....

(d) (i) Use the apparatus to determine the cross-sectional area, A , of the wire. **No repeat readings are needed.**

[2]

.....
.....
.....

(ii) It can be shown that the constant $k = \frac{\rho}{A}$, where ρ is the resistivity of the wire.
Determine the resistivity of the wire.

[2]

.....
.....
.....

(e) Explain how using a wire of a different material in the experiment would affect the graph. [1]

.....
.....

END OF PAPER

BLANK PAGE

BLANK PAGE