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School code

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School name

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Given name/s

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Family name

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Attach your
barcode ID label here

Book

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of

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books used

External assessment 2025

Question and response book

Physics

Paper 1

Time allowed

- Perusal time — 10 minutes
- Working time — 90 minutes

General instructions

- Answer all questions in this question and response book.
- QCAA-approved calculator permitted.
- QCAA formula and data book provided.
- Planning paper will not be marked.

Section 1 (20 marks)

- 20 multiple choice questions

Section 2 (31 marks)

- 5 short response questions



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THIS PAGE WILL NOT BE MARKED

Section 1

Instructions

- This section has 20 questions and is worth 20 marks.
- Use a 2B pencil to fill in the A, B, C or D answer bubble completely.
- Choose the best answer for Questions 1–20.
- If you change your mind or make a mistake, use an eraser to remove your response and fill in the new answer bubble completely.

	A	B	C	D
Example:	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	A	B	C	D
1.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Ensure you have filled an answer bubble for each question.

Do not write outside this box.

Section 2

Instructions

- Write using black or blue pen.
 - Marks will not be deducted for correct answers that use different units or a different number of significant figures/decimal places than those indicated in the question.
 - If you need more space for a response, use the additional pages at the back of this book.
 - On the additional pages, write the question number you are responding to.
 - Cancel any incorrect response by ruling a single diagonal line through your work.
 - Write the page number of your alternative/additional response, i.e. See page ...
 - If you do not do this, your original response will be marked.
 - This section has five questions and is worth 31 marks.
-

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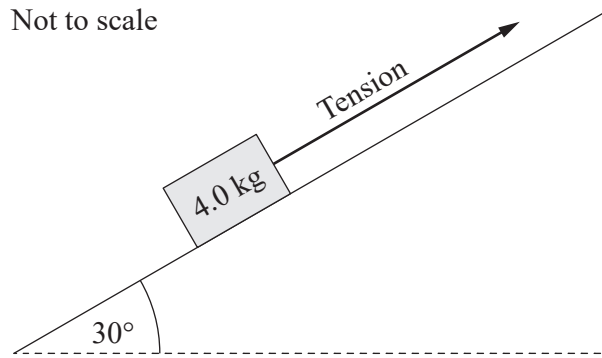
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QUESTION 21 (3 marks)

A box on a frictionless inclined plane is held in place by a rope, as shown.

Not to scale



Determine the magnitude of the tension in the rope. Show your working.

Magnitude of tension = _____ N

Do not write outside this box.

QUESTION 22 (3 marks)

An electron is moved through a change in electric potential from 2.0 V to 8.0 V.

Calculate the work done to the electron. Show your working.

Work done = _____ J

Do not write outside this box.

QUESTION 23 (5 marks)

a) Describe Kepler's second law of planetary motion.

[1 mark]

The Earth's mean orbital radius is 1.49×10^{11} m, while Saturn's mean orbital radius is 1.43×10^{12} m.

b) Calculate the time taken in seconds for Saturn to complete one revolution around the Sun. Show your working.

[4 marks]

Time taken = _____ s

Do not write outside this box.

A photoelectric experiment used light of frequency 8.50×10^{14} Hz, and the maximum kinetic energy of the photoelectrons ejected from the metal was measured to be 4.25×10^{-19} J.

- b) Calculate the work function in electron volts of the metal used in this experiment.
Show your working.

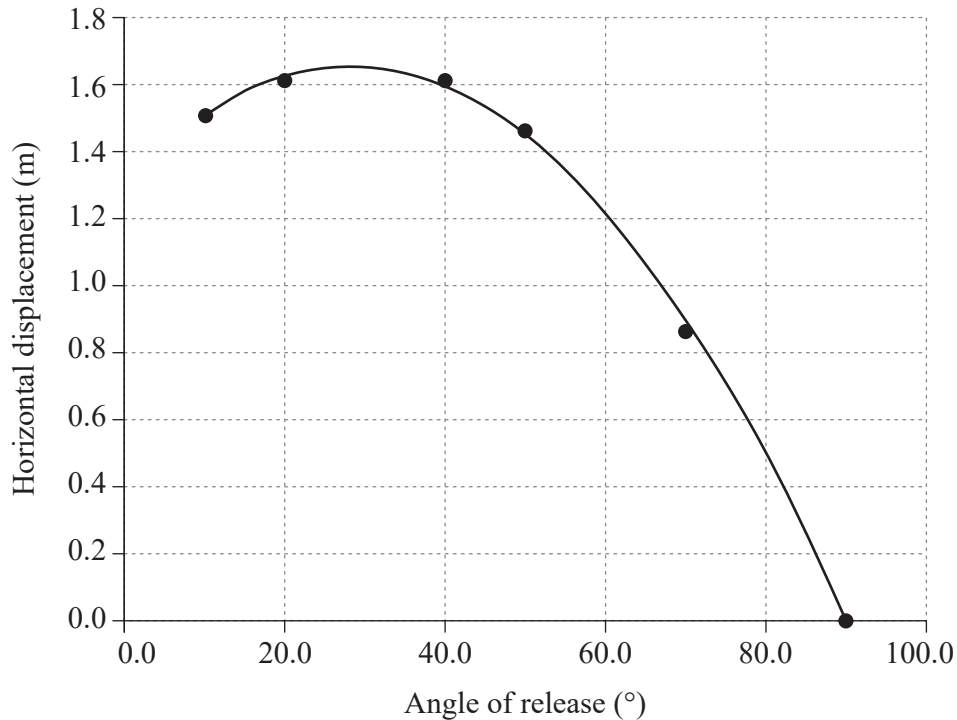
[4 marks]

Work function = _____ eV

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QUESTION 25 (11 marks)

An experiment was conducted by launching a ball with an initial velocity of 3.0 m s^{-1} at varying angles from the horizontal from a height of 1.0 m above the ground. The horizontal displacement was recorded to produce the graph shown.



a) Identify the trend between horizontal displacement and angle of release.

[2 marks]

b) Determine the experimental time taken for the ball to land when released at an angle of 80.0° . Show your working.

[5 marks]

Do not write outside this box.

Time taken = _____ s

c) Determine the maximum height from the ground that the ball could reach using this set-up. Show your working. *[4 marks]*

Maximum height = _____ m

END OF PAPER

Do not write outside this box.



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