



**Cambridge Assessment International Education**  
Cambridge International General Certificate of Secondary Education

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**PHYSICS****0625/62**

Paper 6 Alternative to Practical

**October/November 2018**

MARK SCHEME

Maximum Mark: 40

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**Published**

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

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This document consists of **7** printed pages.



| Question | Answer                                                                                            | Marks |
|----------|---------------------------------------------------------------------------------------------------|-------|
| 1(a)     | $l_0 = 23$ (mm)                                                                                   | 1     |
| 1(b)     | recognisable set-square shown from spring to rule along one of the dotted lines                   | 1     |
| 1(c)(i)  | e values 8, 17, 23, 32, 40                                                                        | 1     |
| 1(c)(ii) | N, mm, mm                                                                                         | 1     |
| 1(d)     | Graph:                                                                                            |       |
|          | axes correctly labelled and right way round                                                       | 1     |
|          | suitable scales, at least $\frac{1}{2}$ the grid used                                             | 1     |
|          | all plots correct to $\frac{1}{2}$ small square                                                   | 1     |
|          | good line judgement, thin, continuous line                                                        | 1     |
| 1(e)     | triangle method used and seen on graph                                                            | 1     |
|          | at least half of candidate's line used                                                            | 1     |
| 1(f)     | answers within the range $0.025 \pm 0.005$ (N/mm) and expressed to 2 / 3 significant figures only | 1     |

| Question | Answer                                                                                                                                             | Marks |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| 2(a)(i)  | $V_T = 2.5(0)$ (V)                                                                                                                                 | 1     |
|          | $I_T = 0.18(0)$ (A)                                                                                                                                | 1     |
| 2(a)(ii) | 0.45 (W)                                                                                                                                           | 1     |
| 2(b)(i)  | $P_X = 0.23$ , $P_Y = 0.22$ and unit W                                                                                                             | 1     |
| 2(b)(ii) | statement: Yes<br>idea of within the limits of experimental accuracy                                                                               | 1     |
|          | <b>explained:</b><br>e.g. close enough, very close, not too far apart                                                                              | 1     |
| 2(c)     | statement: disagree / no                                                                                                                           | 1     |
|          | low current not sufficient to make lamp glow / first lamp would not glow with no current / since there is a current (other lamp cannot be broken). | 1     |
| 2(d)     | lamps and voltmeter in parallel                                                                                                                    | 1     |
|          | correct symbols for lamps, ammeter and voltmeter                                                                                                   | 1     |
|          | variable resistor, correct symbol and position in a correct circuit                                                                                | 1     |

| Question  | Answer                                                                                                                                                                                                                                   | Marks |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| 3(a)(i)   | normal at centre of AB (by eye) produced to cross CD                                                                                                                                                                                     | 1     |
| 3(a)(ii)  | $i = 30^\circ \pm 1^\circ$ drawn to the left of the normal                                                                                                                                                                               | 1     |
| 3(a)(iii) | $P_1$ and $P_2$ in air at minimum distance apart of 5.0cm                                                                                                                                                                                | 1     |
| 3(b)      | line through $P_3$ and $P_4$ neat, straight and continued to N                                                                                                                                                                           | 1     |
| 3(c)(i)   | $a = 55 \pm 1$ (mm)                                                                                                                                                                                                                      | 1     |
| 3(c)(ii)  | $b = 37 \pm 1$ mm and <u>both</u> with correct unit                                                                                                                                                                                      | 1     |
| 3(c)(iii) | $n$ within the range $1.42 \pm 1.60$ if 3 s.f. quoted, or within the range 1.4 to 1.6 if 2 s.f. quoted                                                                                                                                   | 1     |
|           | 2 or 3 significant figures with no unit                                                                                                                                                                                                  | 1     |
| 3(d)      | at least two additional angles suggested                                                                                                                                                                                                 | 1     |
|           | between $10^\circ$ and $60^\circ$ inclusive with at least $5^\circ$ difference between values                                                                                                                                            | 1     |
| 3(e)      | any <b>one</b> from:<br>large pin separation / pins at least 5 cm apart<br>ensure that the pins are vertical / upright / perpendicular to the paper / placed straight<br>view the bases of the pins<br>use thin pencil lines / thin pins | 1     |

| Question | Answer                                                                                                                | Marks |
|----------|-----------------------------------------------------------------------------------------------------------------------|-------|
| 4        | method:                                                                                                               | 1     |
|          | <b>MP1</b> measure room / starting temperature                                                                        |       |
|          | <b>MP2</b> measure time to raise water temperature to boiling point                                                   |       |
|          | <b>MP3</b> repeat with the other two containers                                                                       | 1     |
|          | control variables:                                                                                                    | 2     |
|          | <b>MP4</b> any two from:<br>same starting temperature / same room temperature<br>same volume / mass / amount of water |       |
|          | <b>MP5</b> keep Bunsen burner flame constant / keep the distance from the flame to the bottom of the beaker constant  | 1     |
|          | table:                                                                                                                |       |
|          | <b>MP6</b> table to show container and heating time                                                                   |       |
|          | conclusion:                                                                                                           | 1     |
|          | <b>MP7</b> comparison of heating times and suitable comment made                                                      |       |