



Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

PHYSICS

0625/62

Paper 6 Alternative to Practical

October/November 2016

MARK SCHEME

Maximum Mark: 40

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.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

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| Page 2 | Mark Scheme | Syllabus | Paper |
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| Question | Answer | Marks |
|-----------------|--|----------------------|
| 1(a)(i) | $x = 30.2(\text{cm})$ | 1 |
| 1(a)(ii) | <p>Measure width w of load Place $w/2$ either side of desired position</p> <p>OR</p> <p>draw centre line on load / find centre (of mass) of load and mark side of rule in desired position</p> <p>OR</p> <p>take readings on both sides of the load and find the mean</p> | 1 1 |
| 1(b) | $W = 3.95 (\text{N})$ | 1 |
| 1(c) | new x at least 5 cm different from original and in the range 10 cm–45 cm | 1 |
| 1(d) | <p>two from: difficult to judge the best position of 'almost balanced' is the centre of mass of the ruler exactly over the pivot / has the ruler slipped on the pivot? the load(s) obscure the scale the position of the centre of the load(s) is difficult to judge</p> | 2 |
| 1(e) | <p>3.995 or 4 seen 2 or 3 significant figures (whatever the answer)</p> | 1 1 |
| | Total: | 9 |

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| Page 3 | Mark Scheme | Syllabus | Paper |
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| Question | Answer | Marks |
|-----------------|--|--------------------------|
| 2(a)(i) | $V_1 = 1.7 \text{ (V)}$ $I_1 = 0.32 \text{ (A)}$ | 1 1 |
| 2(a)(ii) | $R = 5.3125 \Omega$ | 1 |
| 2(b) | statement YES justification to include the idea of within the limits of experimental accuracy | 1 1 |
| 2(c)(i) | variable resistor / rheostat | 1 |
| 2(c)(ii) | correct symbol for variable resistor circuit correct | 1 1 |
| | Total: | 8 |

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| Page 4 | Mark Scheme | Syllabus | Paper |
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| Question | Answer | Marks |
|-----------------|--|----------------------------------|
| 3(a) | any two from: length of spring / number of coils diameter / thickness of spring material / type / stiffness / elasticity / spring constant of spring how far spring is displaced / amplitude (of oscillations) | 2 |
| 3(b)(i) | increases has no effect on has no effect on | 1 1 1 |
| 3(b)(ii) | one from: repeats large number of oscillations and divide timing sensor / light gate use a fiducial mark (however expressed) counting down to zero (before starting the timer) | 1 |
| | Total: | 6 |

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|---------------|--|-----------------|--------------|
| Page 5 | Mark Scheme | Syllabus | Paper |
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| Question | Answer | Marks |
|-----------------|---|--------------|
| 4 | clock/stopwatch <u>and</u> source of heat | 1 |
| | heat to boiling with <u>and</u> without lid | 1 |
| | measure time taken to reach boiling point/boil | 1 |
| | same volume / mass / amount of water | 1 |
| | same starting temperature | 1 |
| | suitable table with column headings <u>and</u> units (seconds or minutes) | 1 |
| | conclusion drawn | 1 |
| | Total: | 7 |

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|---------------|--|-----------------|--------------|
| Page 6 | Mark Scheme | Syllabus | Paper |
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| Question | Answer | Marks |
|-----------------|---|--|
| 5(a)(i) | 8.4 cm / 84 mm | 1 |
| 5(a)(ii) | initial BP ₂ distance at least 5.0 cm | 1 |
| 5(b) | graph: axes correctly labelled suitable scales all plots correct to ½ small square good line judgement, thin, continuous line | 1 1 1 1 |
| 5(c) | statement to match graph – expect NO justification to match statement with reference to graph line | 1 1 |
| 5(d) | any two from: difficult to judge when pins are exactly in line difficult to ensure that pins are vertical/straight thickness of lines thickness of pins protractor only measures to $\pm 1^\circ$ | 2 × 1 |
| | Total: | 10 |