

CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International General Certificate of Secondary Education

MARK SCHEME for the October/November 2014 series

0625 PHYSICS

0625/61

Paper 6 (Alternative to Practical), maximum raw mark 40

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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- 1 (a) normal at 90° , straight, at centre [1]
- (b) incident ray at 30° on left of normal, straight [1]
- (c) ray box near beginning of incident ray and pointing along it [1]
- (d) reflected ray at angle of reflection approximately 30° [1]
- (e) any two from:
 darkened room/brighter ray box
 mark rays at centre/edge of beam
 use sharp pencil
 thin ray/small slit in ray box
 perpendicular viewing of protractor [2]

[Total: 6]

- 2 (a) 21°C [1]
- (b) table: s, $^\circ\text{C}$, $^\circ\text{C}$ [1]
- (c) no significant effect, justified by some reference to results [1]
- wording that communicates the idea that the temperatures are the same within the limits of experimental accuracy OR almost the same rate [1]
- (d) lid/cover/smaller cross-sectional area [1]
- (e) any one from:
 room temperature (or equivalent environmental condition)
 initial water temperature
 volume of water
 same/dry insulation [1]

[Total: 6]

Page 3	Mark Scheme	Syllabus	Paper
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- 3 (a) R calculated correctly:
 0.49, 0.99, 1.5(1), 1.99 or 2.0, 2.5(0)
 note: accept more significant figures for this mark [1]
- all R values expressed to suitable precision, expect 2 decimal places
 OR 2 significant figures used throughout OR 3 significant figures used throughout [1]
- (b) graph:
 axes correctly labelled and right way round [1]
 suitable scales, with plots using at least half of grid [1]
 all plots correct to $\frac{1}{2}$ small square [1]
 good line judgement [1]
 single, thin, continuous line, no large 'blobs' greater than $\frac{1}{2}$ small square [1]
- (c) statement to match graph (expect yes) [1]
- justified by reference to straight line through the origin
 OR when l doubles, R doubles owtte [1]
- (d) additional readings with greater l values [1]

[Total: 10]

Page 4	Mark Scheme	Syllabus	Paper
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- 4 (a) $u = 20 \text{ mm}$ AND $v = 58 \text{ mm}$ [1]
- (b) $v/u = 2.9$ e.c.f. from (a) no unit [1]
- (c) $U = 200$, $V = 580$ e.c.f. from (a) [1]
- (d) 1.5 cm OR 15 mm [1]
- (e) statement to match results (expect yes) [1]
- justified by reference to results, communicating idea of within (beyond, ecf) limits of experimental accuracy [1]
- (f) any two from:
 use of darkened room/brighter lamp
 mark position of centre of lens on holder
 place metre rule on bench (or clamp in position)
 ensure object and (centre of) lens are same height (from the bench)
 repeats and average
 moving lens/object/screen back and forth (to find sharpest image) owtte
 screen and lens and object all perpendicular to bench [2]
- (g) image inverted [1]
- (h) any one from:
 darkened room/brighter lamp
 moving lens/object/screen back and forth owtte
 use object with fine detail e.g. cross-wires
 measure at middle of range where image is sharp [1]

[Total: 10]

Page 5	Mark Scheme	Syllabus	Paper
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- 5 (a) $h = 9.5\text{cm}$ $d_T = 7.2\text{cm} - 7.3\text{cm}$ and $d_B = 4.5\text{cm}$ [1]
- $d_A = 5.85/5.9\text{cm}$ (no mark), V rounds to 260cm^3 (no ecf) [1]
- 2 or 3 significant figures and cm^3 [1]
- (b) measurement of circumference half way up, or at top and bottom [1]
- more than one revolution used for the measurement in at least one position, and divide [1]
- (c) (i) 225 [1]
- (ii) 275 (ecf 500 – candidate's (c)(i)) [1]
- (d) correct line of sight clearly shown at right angles outside measuring cylinder [1]

[Total: 5]