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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

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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 owtte
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, °C, °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]

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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 ½ small square [1]
good line judgement [1]
single, thin, continuous line, no large 'blobs' greater than ½ 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]

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4 **(a)** u = 20 mm AND v = 58 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]

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5 **(a)** h = 9.5cm d_T = 7.2 cm – 7.3 cm and d_B = 4.5 cm [1]

d_A = 5.85 / 5.9 cm (no mark), V rounds to 260 cm^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]

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