

CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International General Certificate of Secondary Education

MARK SCHEME for the October/November 2014 series

0625 PHYSICS

0625/63

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

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Page 2	Mark Scheme	Syllabus	Paper
	Cambridge IGCSE – October/November 2014	0625	63

- 1 (a) h_0 present and $H_0 = 84(.0)(\text{cm})$ [1]
- (b) suitable explanation,
e.g. same no. of graduations between 60 cm mark and each end of mass owtte,
or mark on side of rule and mass [1]
- (c)(d) h present and $H = 83(.0)$ [1]
 $D = 1(.0)$ and $d \times D$ calculations correct: 60, 75, 100, 111, 100 [1]
- (e) $d \times D$ not constant / D doesn't always double when d halves owtte [1]
- (f) (i) reference to mass/weight of rule [1]
(ii) measure height at bench [1]
subtract H_0 [1]
- [Total: 8]**
- 2 (a) θ for **A** 76 (°C) and for **B** 79 (°C) [1]
- (b) units all correct [1]
 t values correct 0, 30, 60, 90, 120, 150, 180 [1]
- (c) statement matching temperature changes with justification referring to results and
involving correct comparative change in temperature [1]
justification has specific mention of temperature change in the same time owtte [1]
- (d) appropriate source of inaccuracy associated with procedure e.g. any one from:
 - water levels not the same
 - thermometer scales not read at 90°
 - initial temperatures different
 - not able to stir water
 - not waiting for temperature to stabilise initially / waiting time not long enough [1]
- (e) any two factors relating to apparatus from:
 - keep thermometer at same depth
 - same size/thickness/material of test-tube / same test-tube
 - same water levels/volume/quantity/amount of water
 - same thickness/surface area of surface material [2]
- [Total: 8]**

Page 3	Mark Scheme	Syllabus	Paper
	Cambridge IGCSE – October/November 2014	0625	63

3 (a) $h_o = 2.0(\text{cm})$ [1]

(b)(c) $h_I = 1.9(\text{cm})$ [1]

S values round to 1.1 (allow ecf), 1.3, 1.7, 2(.0), 2.2, 2.5 [1]

(d) graph:
 axes labelled with quantity and unit and in correct orientation [1]
 appropriate scales [1]
 plots correct to $\frac{1}{2}$ small square [1]
 well-judged straight line and thin continuous line, precise plots [1]
 triangle method/information for gradient seen marked on graph [1]

(e) (i) G calculated from at least $\frac{1}{2}$ line [1]

(ii) f in range 15 – 19(cm) [1]

[Total: 10]

4 (a) (i) (as θ increases) d increases (to a maximum at 40° / between 40° and 50° / between 30° and 40°) then decreases [1]

(ii) both in range 15 to 35(cm) [1]

(b) any suitable means of detecting d more easily, e.g. any one from:
 • sand tray
 • use of carbon paper
 • ink on ball
 • fixing rule to floor
 • use of video
 • reference to releasing ball remotely
 • mark approximate point and repeat to confirm [1]

(c) repeats owtte [1]

qualification or detail regarding repeats, e.g. repeat at each value of θ /
 repeat and take an average / take more sets of readings / repeat for θ values
 between those given in table [1]

[Total: 5]

Page 4	Mark Scheme	Syllabus	Paper
	Cambridge IGCSE – October/November 2014	0625	63

- 5 (a) voltmeter in parallel with lamp L and with correct symbol [1]
- (b)(c) table: [1]
 $V = 1.7 \text{ (V)}$ [1]
 $I = 0.18 \text{ (A)}$ [1]
 $R = 9.4(4)$ ecf (b), 7.6/7.58 with 2 or 3 sig. figs. [1]
all units correct (V, A, Ω) [1]
- (d) statement matches results, with matching justification which refers to values being 'too different' / 'difference beyond limits of experimental accuracy' owtte [1]
- (e) lamp in circuit 1 brighter than in circuit 2 [1]
and has greater resistance [1]
- (f) correct circuit symbol for variable resistor (rectangle with strike-through arrow only) [1]
connected in correct series circuit [1]

[Total: 9]