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Cambridge International General Certificate of Secondary Education

MARK SCHEME for the October/November 2014 series

0625 PHYSICS

0625/53 Paper 5 (Practical), maximum raw mark 40

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1 **(a)** h_0 in range 1.5 to 2.5 (cm) and to at least 1dp [1]

(b)(c) h_I values decreasing [1]

correct *S* calculations and *S* values all > 0.8 [1]

(d) graph:
axes labelled with quantity and unit and in correct orientation [1]
appropriate scales [1]
plots correct to ½ 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 ½ line [1]

(ii) *f* in range 14 – 16 (cm) [1]

[Total: 10]

2 **(a)(b)** table:
units all correct, s °C °C
NOT C°, NOT centigrade [1]

t values correct 0, 30, 60, 90, 120, 150, 180 [1]
θ for **A** and **B** decreasing [1]
final interval less than initial in both sets [1]
both sets of data to precision of at least 1 °C [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: 10]

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3 **(a)(b)(c)** table:
p.d.s all < 3.0 V and to at least 1 d.p. [1]
currents all < 1.00 A and to at least 2 d.p. [1]
units all correct (V, A, Ω) [1]
R calculations correct [1]
V, I and R values all decreasing [1]
2 or 3 sig. figs. in *R* column [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 circuits 2 and 3
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: 10]

4 **(a)** h_0 less than 100 cm [1]

(b) **(i)** suitable explanation,
e.g. same no. of graduations between 60 cm mark and each end of object owtte,
or mark on side of rule and object [1]

(ii)(iii) table:
h values all decreasing [1]
h values to at least 1 d.p. [1]

(c) **(i)** correct calculations of *H* [1]

(ii) correct $d \times H$ calculations [1]

(d) $d \times H$ not constant / *H* doesn't always double when *d* halves owtte [1]

(e) **(i)** reference to mass/weight of rule [1]

(ii) measure height at bench [1]

subtract h_0 [1]

[Total: 10]

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