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) <u>and</u> to at least 1dp [1]

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

correct S calculations <u>and</u> 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 <u>and</u> 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 <u>with</u> justification referring to results <u>and</u>
involving correct comparative change in temperature [1]

justification has specific mention of temperature change <u>in the same time</u> owtte [1]

(d) appropriate source of inaccuracy <u>associated with procedure</u> 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 <u>apparatus</u> 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 <u>and</u> to at least 1 d.p. [1]
        currents all < 1.00 A <u>and</u> 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
<u>and</u> 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 <u>side</u> 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]