MARK SCHEME for the October/November 2010 question paper

for the guidance of teachers

0625 PHYSICS

0625/53   Paper 5 (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.

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1 **(a)** *a* and *b* present and in cm [1]
   a + *b* < 50 cm [1]
   m correct calculation [1]

   (b) At least two values given for *w* <u>or</u> *t* [1]
   More than two values given for *w* <u>and</u> *t* [1]
   Sensible values for *w* and *t* [1]
   V calculation correct method [1]
   Density to 2 or 3 significant figures and unit [1]
   Value 0.5–1.5 [1]

   (c) Centre of mass at 50 cm mark/midpoint/middle (wtte) [1]

[Total: 10]

2 **(a)** θ_r sensible value [1]

   (b)–(d) *t* in s, θ in °C [1]
   Correct *t* values [1]
   Table 2.1 temperatures decreasing [1]
   Table 2.2 temperatures decreasing [1]
   Evidence of temperatures to 1°C [1]

   (e) Statement matches readings [1]
   Justified by reference to readings
   Comparison given of changes in temperature with numbers [1]

   (f) Any two from:
   Same (starting) temperature (wtte)
   Constant room temperature/draughts (wtte)/environment/place
   Carry out in same time intervals/duration
   Same thermometer (wtte)

   NOT volume of water/location of thermometer/beaker/'temperature' <u>alone</u>
   If > 2 responses, –1 for each <u>additional</u> incorrect (ignore 'neutrals') [2]

[Total: 10]

3 **(a)** V_0 sensible value 1.0–2.5 [1]

(b) Table:
R in Ω, V in V [1]
All V to at least 1 d.p. [1]
V values decreasing [1]

(c) Graph: axes labelled and scales suitable (origin included) [1]
All plots correct to nearest ½ small square [1]
Well judged best fit line [1]
Thin line [1]

(d) Line extended suitably to y axis [1]
Estimate correct to ½ small square [1]

[Total: 10]

4 **(b)** d = 2.8–3.2 cm [1]

(c)–(e) correct × values 2.0, 4.0, 6.0, 8.0, 10.0 [1]
s values present and increasing [1]
s^2 values correct [1]
s^2 values all to same number of significant figures (2, 3 or 4) [1]
All above in correct units [1]
Final s^2 value 2× first value (± 10%) [1]

(f) Correct statement matching results [1]

(g) Justified referring to specified results
(either exact or within limits of experimental accuracy, or wtte) [1]

(h) Any one of:
Use of darkened room
How to avoid parallax when taking readings
Use of marks paper on screen to aid measurements
Card and screen vertical
Repeats [1]

[Total: 10]

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