UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2012 question paper

for the guidance of teachers

0625 PHYSICS

0625/51 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)** V_1 about 80, $V_2 > V_1$ [1]
V_G correct [1]
cm^3 (allow ml) at least once, not contradicted [1]

(b) V_3 about 70, $V_4 > V_3$ [1]
Difference correct [1]
V_A correct [1]

(c) V_W present and within ± 5 cm^3 of V_A [1]

(d) Three from:
V_A: Finger increases V_4 / tube not pushed in far enough
Some water in test-tube
V_W: Water remaining in tube / measuring cylinder
Either (accept only once):
Measuring cylinder readings not very sensitive
Subtraction produces large percentage uncertainty [3]

[Total: 10]

2 **(a)** Sensible value for θ_R (15(°C) to 50(°C)) [1]

(b) Table:
mm, °C [1]
Correct *d* values 100, 80, 60, 40, 20, 10 [1]
Temperatures increasing (accept first two readings identical) [1]
Evidence of temperatures to at least 1°C [1]

(c) θ_V present and greater or equal to θ_H [1]
Correct difference AND higher, lower or same to match difference (expect higher) [1]

(d) Draughts [1]
Room temperature / humidity [1]

(e) One from: Avoidance of parallax explained
Waiting time between readings [1]

[Total: 10]

3 **(a)** (cm, V, A) (no mark awarded)
V to at least 1 d.p. and < 3 V [1]
I to at least 2 d.p. and < 1 A [1]

(b) Graph:
Axes correctly labelled and correct way around [1]
Suitable scales – plots occupy at least half the grid [1]
All plots correct to ½ small square [1]
Good line judgement AND thin, continuous line AND plots suitably shown (penalise large 'blobs') [1]

(c) Triangle method using line drawn and shown (no line 1 max) [1]
Using at least half of line [1]

(d) 2 or 3 significant figures, value matching G [1]
With unit Ω / ohm(s) [1]

[Total: 10]

4 **(c)** *x* recorded and < 40 cm [1]

(e) *y* recorded > 40 cm [1]
x and *y* in m, cm or mm [1]

(f) *f* correct [1]

(g) $x + y = 75–85$ cm [1]
two *f* values the same to within ± 1 cm [1]
both *f* values to 2 or 3 significant figures, consistent [1]

(h) Correct statement for results (expect Yes) [1]
Idea of within (or beyond) experimental accuracy [1]

(i) One from:
Use of darkened room
How to avoid parallax when taking readings
Movement of lens back and forth to obtain clearest image
Mark lens holder to show position of centre of lens
Metre rule clamped or on bench
Object, lens and screen all perpendicular to bench
Object and lens same height above bench [1]

[Total: 10]