UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the October/November 2011 question paper for the guidance of teachers

0625 PHYSICS

0625/62 Paper 6 (Alternative to 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)** x = 1.9 (cm), 19 (mm) 0.019 (m), y = 2.1 (cm), 21 (mm), 0.021 (m)

(b) unit in **(a)** seen at least once and correct, matching both figures [1]
evidence of x and y values from **(a)** × 10 [1]
m_1 = 124 OR 0.124 accept more sig. figs. [1]
unit seen, g or kg to match figures [1]

(c) $m_2 + m_3$ = 99.4 (g) [1]

(d) two from:
modelling clay remaining on knife/rule/fingers/lost in cutting
more difficult to balance with smaller pieces
more readings so more inaccuracies
rounding errors in extra calculations
difficult to find centre of misshapen cube
modelling clay might not have uniform density [2]

(e) mark centre of bottom of cube OR take readings at either side of cube [1]

[Total: 9]

2 **(a)** θ_h = 86 (°C) [1]

(b) cm^3, °C [1]
10, 20, 30, 40, 50, 60 [1]

(c) graph:
axes labelled and scales suitable
plots to take up half grid [1]
all plots correct to nearest ½ small square [1]
well-judged best-fit line [1]
thin line and small plots [1]

(d) any two from:
same hot water temperature / initial temperature,
constant room/surrounding temperature / other suitable named environmental condition
constant cold water temperature
same amount/rate of stirring
time taken for transfer w.t.t.e. / poured at same time interval [2]

(e) any one from:
avoidance of parallax explained (thermometer or measuring cylinder)
wait for temperature to stabilise
other suitable suggestion related to measurement [

[Total: 10]

3 **(a)** $V = 0.8$ (V) [1]

(b) $V_A + V_B = 1.4$ + candidate's value for V_A, expect 2.2 V [1]
statement matching results, expect YES [1]
justified referring to results [1]

(c) $R = 7.78$, to 2 or 3 significant figures and unit Ω [1]

(d) voltmeter correctly shown [1]

(e) good reason, e.g. [1]
'1V scale better as V_A less than 1V' OR '10V scale acceptable to avoid changing since V_B and V_C larger than 1V'

[Total: 7]

4 **(a)** trace:
normal at 90° in correct position [1]
C at 3.0 cm to left of **L** [1]

(b) **(i) & (ii)** all lines neatly drawn in correct position [1]

(iii) table:
cm, °, ° [1]
i value in range 16–18 AND r value in range17–19 [1]

(c) any two from:
thickness of lines
thickness of pin holes/pins
allow thickness of mirror o.w.t.t.e. e.g. 'two lines seen' [2]

(d) any one from:
ensure pins vertical / view bases of pins / increase pin separation
draw thin lines / use sharp pencil
view protractor / rule perpendicularly o.w.t.t.e.
mirror 90° to paper [1]

[Total: 8]

5 **(a)** l / mm, e / mm or in words

(b) 1, 3, 5, 7, 11, 17 [

(c) no [1]
larger loads produce bigger increases in extension OR increase between (successive) extensions not the same OR ratio W/e not the same [1]

(d) clamp, spring and weight sensibly shown [1]
ruler close to spring or with suitable horizontal pointer or equivalent [1]

[Total: 6]