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

0625/52 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)** *x* and *y* values present both less than 40 cm [1]
x and *y* consistently in either mm, cm or m [1]
m_1 correct in g, with unit [1]

(b) two new sets of *x*, *y* and *m*; both $x + y = 40 \pm 0.5$cm [1]
second new set of *x*, *y* and *m* ($m_3 < m_2$) [1]
$m_2 + m_3$ correct ($= m_1 \pm 2$g) [1]
correct unit for *x* and *y* at least once (in **(a)** or **(b)**) [1]

(c) two from:
modelling clay remaining on knife/rule/fingers/lost in cutting
NOT just 'dropped'/'lost' – must mention cutting
more difficult to balance with smaller pieces
any explicit idea of why two pieces not so accurate
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]

(d) mark centre of bottom of cube / take readings at either side of cube [1]

[Total: 10]

2 **(a)** θ_h and θ_c sensible values [1]

(b) correct *V* values in table 10, 20, 30, 40, 50, 60 [1]
θ_m values decreasing and all between θ_r and θ_h [1]

(c) graph:
axes labelled and scales suitable [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 or wtte
[2]

(e) any one from:
avoidance of parallax explained (thermometer or measuring cylinder)
wait for temperature to stabilise [1]

[Total: 10]

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3 **(a)** all V values to 1 decimal place or better and < 2.5V [1]
unit at least once and not contradicted [1]
$V_A > V_B$ [1]
$V_C > V_A$ and $V_C > V_B$ [1]

(b) $V_A + V_B = V_C$ (within 10%) [1]
correct statement matching results [1]
justification matching statement and referring to results [1]

(c) I sensible value and to at least 2 decimal places [1]
R correct (ecf), 2 or 3 significant figures, with unit [1]

(d) voltmeter correctly shown [1]

[Total: 10]

4 trace:

(a) normal at 90° to **MR** in correct position [1]

(b)–(h) all lines neatly drawn in correct position [1]
AB in correct position [1]
both P_2P_3 distances $\geqslant$ 5.0cm [1]
P_1 positions correct [1]

(g) table:
i values correct [1]
r values correct [1]
all $i = r$ (within 4°) [1]

(i) any two from:
thickness of lines
thickness of pin holes/pins
thickness of mirror
thickness of protractor [2]

[Total: 10]