**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

**0625/53** 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.

Mark schemes must be read in conjunction with the question papers and the report on the examination.

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**1** **(a)** *h w* and *d* present AND in cm, to nearest mm [1]
*V* correct [1]
$\rho$ correct and 1.5 – 3.5 (g/cm$^3$) ignore significant figures [1]

**(b)** $m_s$ and $V_1$ recorded [1]
$V_2 > V_1$ [1]
$V_s$ and $\rho$ correct [1]
$\rho$ to 2 or 3 significant figures and unit [1]
value same as above to 0.5 g/cm$^3$ [1]

**(c)** two from:
difficulty of making perfect cuboid shape o.w.t.t.e.
smaller mass so greater inaccuracy
volume of thread not taken into account
air bubbles in clay/uneven density distribution/clay may absorb water/some clay may stick to the knife [2]

**[Total: 10]**

**2** **(a)** $\theta_c$ and $\theta_h$ sensible values [1]
$\theta_m$ between $\theta_c$ and $\theta_h$ [1]
temperatures in °C (at least once, not contradicted) [1]

**(b)** correct *E* values [1]
*E* values in J and consistent 2, 3 or 4 significant figures [1]

**(c)** **(i)** statement matches readings [1]
justified by reference to readings [1]

**(ii)** any sensible reference to heat loss to surroundings/heat gained by container [1]

**(d)** ticks in boxes 3, 4 & 5 [2]
(−1 for any extra ticks in boxes 1, 2 or 6 to a minimum of 0
if only two boxes ticked, 1 correct and 1 incorrect scores 1 mark)

**[Total: 10]**

**3** **(a)** table:
m, V, A, Ω (words or symbols) [1]
all *V* to at least 1 d.p. [1]
all *I* to at least 2 d.p. [1]
correct *R* values [1]
consistent 2 or 3 significant figures for *R* [1]

**(b)** *R* (directly) proportional to $l$ o.w.t.t.e. allow ecf [1]
numerical example given (allow two ratios) [1]
idea of within limits of experimental accuracy [1]

**(c)** prediction: sum of *R* values in table or other multiplication method (could be rounded) [1]
working shown [1]

**[Total: 10]**

**4** **(a)** table:
*v* values all to nearest mm [1]
1/*u* and 1/*v* values correct [1]
consistent 3 or 4 significant figures for 1/*u* and 1/*v* [1]

**(b)** graph:
axes labelled [1]
all plots correct to nearest ½ small square [1]
well-judged best-fit line [1]
thin line [1]

**(c)** intercepts correct to ½ small square [1]
both intercepts 6.4–7.0 [1]

**(d)** any one from:
use of darkened room
how to avoid parallax when taking readings
movement of lens back & forth to obtain clearest image
mark lens holder to show position of centre of lens
metre rule clamped or on bench
lens, object, screen perpendicular to bench [1]

**[Total: 10]**