**CAMBRIDGE INTERNATIONAL EXAMINATIONS**

**International General Certificate of Secondary Education**

# MARK SCHEME for the October/November 2012 series

## 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.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

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**1** **(a)** $l$ value 45 – 55 cm / 450 – 550 mm unit required [1]

**(b)** Use of fiducial mark/blocks/protractor/set square
Move ruler closer to bob/lower bob [1]
(Can score the mark from a well-drawn diagram)

**(c)** Table: cm, s, s [1]
Five $t$ values (for 10, not 9 swings) ($t_{10}$ = 14.2 s) [1]
$t$ values all similar (± 0.2 s) [1]
$T$ values correct [1]
$T$ values consistent 2, 3 or 4 significant figures [1]

**(d)** Description: little or no effect (owtte) allow ecf from **1(c)** [1]
Justification: $T$ values very similar (owtte) [1]

**(e)** Any one from:
Reduces human reaction error
Gives a more accurate value of T
T is too small/oscillations are too quick
Gives an average value (of T) [1]

**[Total: 10]**

**2** **(a)** Sensible room temperature value [1]

**(b)** Sensible hot water temperature $\theta_0$ (between 60 and 100) [1]
$\theta_1 < \theta_0$ and temperatures in °C at least once, not contradicted [1]
$\theta_A$ and $\theta_H$ correct calculations [1]

**(c)** $\theta_2 < \theta_1$, $\theta_3 < \theta_2$ [1]
$\theta_W < \theta_B$ [1]

**(d)** Ratios calculated [1]
Ratios close (owtte) or ratios too different (owtte) [1]

**(e)** Any two from:
Room temperature/ draughts/humidity/air conditioning
Initial (water) temperature (cold or hot)
Amount of stirring
Time interval
Mass/volume/amount of water/water level
Size/surface area/shape/material/thickness of beaker [2]

**[Total: 10]**

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**3** **(a)** $I_S$ to at least 2 decimal points and ⩽ 1A [1]
$V_S$ to at least 1 decimal point and 1 to 2.5 V [1]
$R_S$ value correct [1]

**(b)** $V_P$ and $I_1$ present [1]
$I_2$ and $I_3 < I_1$ [1]
$I_C = I_1$ (± 10%) [1]
Units A and V both at least once and not contradicted [1]
$R_P$ with unit [1]

**(c)** Circuit: correct symbol for variable resistor (not potential divider symbol) [1]
Variable resistor in a correct position [1]

**[Total: 10]**

**4** **(a)** and **(b)** Table: Five *v* values present [1]
Correct *d* values [1]

**(c)** Graph:
Axes correctly labelled and scales suitable [1]
All plots correct to ½ small square [1]
Good line judgement [1]
Thin, continuous line [1]

**(d)** Triangle method used and shown [1]
Using at least half of line [1]

**(e)** *f* = 14 – 16 cm (accept numbers rounding to 14/16) [1]
2 or 3 significant figures and unit [1]

**[Total: 10]**

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