

**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.

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

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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  $x + y = 40 \pm 0.5\text{cm}$  [1]  
second new set of  $x$ ,  $y$  and  $m$  ( $m_3 < m_2$ ) [1]  
 $m_2 + m_3$  correct ( $= m_1 \pm 2g$ ) [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)  $\theta_h$  and  $\theta_c$  sensible values [1]
- (b) correct  $V$  values in table 10, 20, 30, 40, 50, 60 [1]  
 $\theta_m$  values decreasing and all between  $\theta_c$  and  $\theta_h$  [1]
- (c) graph:  
axes labelled and scales suitable [1]  
all plots correct to nearest  $\frac{1}{2}$  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  $90^\circ$  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  $\geq 5.0\text{cm}$  [1]  
 $P_1$  positions correct [1]
- (g) table: [1]  
 $i$  values correct [1]  
 $r$  values correct [1]  
all  $i = r$  (within  $4^\circ$ ) [1]
- (i) any two from: [2]  
thickness of lines  
thickness of pin holes/pins  
thickness of mirror  
thickness of protractor
- [Total: 10]**