

**MARK SCHEME for the May/June 2010 question paper**  
**for the guidance of teachers**

**0625 PHYSICS**

**0625/61**

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) (i)  $l = 29$  (mm) and  $l = 31$  (mm) (allow 2.9 cm, 3.1 cm) [1]  
 $e_A = 14$  (mm) and  $e_B = 15$  (mm) (ecf) (ignore minus signs) [1]
- (b) (i) both  $l$  correct to (21.5 – 22) and 24 [1]  
(ii) (6.5 – 7) and 8 (ecf) (ignore minus signs) [1]  
(iii)  $e_{av} = 7.5$  (c.a.o.) [1]
- (c) statement matches readings (expect YES) (ecf NO) [1]  
justification matches statement and by reference to results (too different, wtte) [1]  
(expect within limits of experimental accuracy, wtte)
- (d) any one of:  
avoidance of parallax error explained  
use of horizontal aid  
measuring to same point each time  
repeats  
wait for springs to stop moving [1]
- [Total: 8]**
- 2 (a) (i)  $T_1$  correct 18 [1]  
(ii)  $T_2$  correct 4 [1]  
unit °C (either position and not contradicted) [1]
- (b) graph:  
y-axis labelled [1]  
plots occupying at least half of grid on suitable scale [1]  
all plots correct to  $\frac{1}{2}$  square [1]  
well judged single, smooth curve line, not 'point-to-point' [1]  
thin line [1]
- (c) (i)  $T_2 < T_1$  (wtte) [1]  
(ii) decreasing gradient (wtte) [1]
- [Total: 10]**

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- 3 (a) correct symbol [1]  
correct position [1]
- (b) table:  
*V*/*l* values correct 8.35, 3.58, 2.08, 1.39, 1.00 [1]  
consistent 2 or 3 significant figures [1]  
unit V/m [1]
- (c) statement matches readings (expect NO) [1]  
justification matches statement and by reference to results  
*V*/*l* not constant, as *l* increases *V* decreases [1]
- (d) any one of:  
check for zero error  
avoidance of parallax error explained  
switch off between readings  
repeats [1]
- [Total: 8]**
- 4 (a) (i) pins at least 5 cm apart [1]  
(ii)  $i = 30$  [1]  
(iii)  $r_1 = 31$  [1]
- (b) (i) & (ii) both lines correct area [1]  
(iii)–(v)  $r_2$  correct to  $\pm 1^\circ$  with unit [1]  
difference = 1 or  $-1$  (c.a.o.) [1]
- (c) statement matches result (expect YES) (ecf NO) [1]  
justification matches statement and by reference to result  
(expect within limits of experimental accuracy, wtte) (too different, wtte) [1]
- [Total: 8]**

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- 5 (a) column 1:  $d$ , m (or in words) [1]  
columns 2 and 3:  $t$ ,  $T$  (or in words) [1]  
columns 2 and 3: s, s (or in words) [1]
- (b) accuracy/reducing uncertainty/sensible comment on reaction time [1]
- (c) (i) at least three correct values entered in table  
1.66, 1.52, 1.40, 1.28, 1.17 (at least 2 significant figures) c.a.o [1]
- (ii) statement matches result (expect NO) AND  
justification matches statement and by reference to result  
(expect decreasing, not equal, not constant, different, changing, wtte)  
allow ecf from (i) [1]

**[Total: 6]**