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 <u>cm</u>, 3.1 <u>cm</u>) [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

(expect within limits of experimental accuracy, wtte)   (<u>too</u> different, wtte) [1]

(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 ^{o}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 ½ 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]

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 ± 1° 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 <u>three</u> 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) <u>AND</u>
justification matches statement and by reference to result
(expect decreasing, not equal, not constant, different, changing, wtte)
allow ecf from **(i)** [1]

[Total: 6]