

## **MARK SCHEME for the October/November 2012 series**

### **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.

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

Cambridge will not enter into discussions about these mark schemes.

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- 1 (a)  $d_0 = 21$  (mm) [1]
- (b)  $D_0 = 210$  (mm) or  $10 \times$  candidate's (a) [1]
- (c)  $L$  values 1.0, 2.0, 3.0, 4.0, 5.0 [1]  
 $e$  values 1.0, 9.0, 21.0, 29.0, 40.0 [1]
- (d) Graph:  
 Axes correctly labelled with quantity and unit and correct way around [1]  
 Suitable scales [1]  
 All plots correct to  $\frac{1}{2}$  small square  
 Good line judgement and a single, thin, continuous line [1]
- (e) Triangle method used and shown on the graph [1]  
 Using at least half of line [1]
- (f) Any one from:  
 Always measure from same point on spring (top or bottom of ring)  
 Wait for spring/weight to stop bouncing  
 Use of horizontal aid/ensure ruler is vertical  
 Bench surface not uniform [1]
- [Total: 11]**
- 2 (a)  $\theta_R = 24(^{\circ}\text{C})$  [1]
- (b) (i) Table:  
 $s$ ,  $^{\circ}\text{C}$ ,  $^{\circ}\text{C}$  [1]
- (ii) About the same [1]  
 Justified with reference to numbers in table [1]
- (c) Any two from:  
 Volumes of water  
 Room temperature/draughts  
 Same beaker  
 Initial water temperature [2]
- [Total: 6]**

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- 3 (a) Correct symbols for ammeter, voltmeter and lamps [1]  
 Ammeter and voltmeter in correct positions [1]  
 Correct parallel circuit [1]
- (b) (i) and (ii)  $V_A = 1.9(V)$   $R_A = 2.9(2) (\Omega)$  [1]  
 Units V and  $\Omega$  [1]
- (iii) Pointer at correct position (0.65) [1]
- (c) No mark awarded
- (d) Statement matches readings (expect YES) [1]  
 Justified with idea of experimental inaccuracy [1]  
 (expect 'close enough', owtte)

[Total: 8]

- 4 (a) Trace: [1]  
 Normal at  $90^\circ$  in correct position [1]  
 Angle of incidence =  $30^\circ (\pm 2^\circ)$
- (b)  $P_1P_2$  distance  $\geq 5.0$  cm [1]  
 $P_3P_4$  line and line **GE** correctly and neatly drawn [1]
- (c) (i)  $r = 18$  or  $19$  or  $20$  [1]  
 (ii)  $i/r$  value correct [1]
- (d) (i)  $i/r$  value 1.54 and both  $i/r$  values with no unit and to 2 or 3 significant figures [1]  
 (ii) Idea of within (or beyond) limits of experimental accuracy [1]

[Total: 8]

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- 5 (a) Measuring cylinder  
Tape measure  
Newtonmeter (spring balance)  
Electronic balance  
Manometer
- 1 mark each [5]
- (b) (i) Viewing scale perpendicularly (owtte) [1]
- (ii) Any one from:  
Moving lens back and forth  
Dark area (owtte)  
Object and lens at same height from bench  
Object lens and screen at right angles to bench [1]
- [Total: 7]