

**MARK SCHEME for the May/June 2012 question paper  
for the guidance of teachers**

**0625 PHYSICS**

**0625/63**

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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Page 2	Mark Scheme: Teachers' version	Syllabus
	IGCSE – May/June 2012	0625

- 1 (a) Table:  
 correct  $d$  values  
 70.0, 60.0, 50.0, 40.0, 30.0, 20.0, 10.0  
 cm, N ALLOW m, mm if consistent with figures
- (b) (i)  $d$  against  $F$  (or vice versa) OR distance against force/forcemeter reading  
 NOT 'extension', 'forcemeter', quantity expressed just as units [1]
- (ii) Straight line [1]  
 Through origin or wtte [1]
- (c) Would change forcemeter reading/change mass on rule/wtte [1]
- (d) Check distance from bench is the same at two points or wtte/  
 Line up by eye with windowsill (or suitable horizontal reference) [1]
- [Total: 7]**
- 2 (a) 23 °C need unit for the mark [1]
- (b) Axes correctly labelled with quantity and unit [1]  
 Suitable scales [1]  
 All plots correct to ½ small square [1]  
 Good line judgement [1]  
 Thin, continuous line [1]
- (c) Two from:  
 Room temperature/humidity/sun through window/air conditioning  
 Draughts  
 Initial water temperature [2]
- [Total: 8]**
- 3 (a) (i)  $V_1 = 1.9$  [1]  
 $I_1 = 0.3$  [1]  
 Units V and A both correct [1]
- (ii)/(iii)  $R_p = 6.33$  and  $4R_p = 25.3/25.2$  to 2 or 3 sig. figs. [1]  
 $\Omega$  [1]
- (b)  $R_s = 23.8 (\Omega)$  or  $24 (\Omega)$  [1]
- (c) Correct statement (from candidate's work)  
 with matching justification (idea of within or beyond experimental accuracy) [1]

Page 3	Mark Scheme: Teachers' version	Syllabus
	IGCSE – May/June 2012	0625

(d) Circuit: correct symbols for ammeter, voltmeter and lamp in correct series circuit

(e) (i) Change/control current/voltage

(ii) To obtain range of readings (or write)

[1]

[Total: 10]

4 (a) Blocks parallel with ONE sphere completely between  
Rule correctly placed

[1]  
[1]

(b) (i) Line of sight perpendicular to scale  
Line of sight along bottom of meniscus

[1]  
[1]

(ii) 70 (cm<sup>3</sup>)

[1]

(iii) 0.53 cm<sup>3</sup>, 2 or 3 significant figures, with unit

[1]

[Total: 6]

5 (a) Trace:

Normal at 90° in correct position

[1]

N at 4 cm above AB and angle of incidence 20°

[1]

a value 4.3 cm ± 1 mm correct answer only

[1]

(b) All correct lines drawn, thin and continuous

[1]

a and b both with consistent, correct unit which matches figures

[1]

b value 6.2 cm ± 3 mm correct answer only

[1]

n value range 1.4 – 1.5 after rounding

[1]

to 2 or 3 significant figures and no unit

[1]

(c) One from:

Pins well spaced

Pins at least 5 cm apart

View bases of pins

Ensure pins vertical

Use thin lines

Sharp pencil

Use thin pins

[1]

[Total: 9]