

MARK SCHEME for the October/November 2012 series

0625 PHYSICS

0625/53

Paper 5 (Practical), maximum raw mark 40

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

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Page 2	Mark Scheme	Syllabus	Paper
	IGCSE – October/November 2012	0625	53

- 1 (a) (i) and (ii) l_0 and l_1 clearly in cm/mm and $l_1 > l_0$ [1]
- (iii) Correct value for e_1 from 1(a)(i) & 1(a)(ii) [1]
- (iv) Correct calculation for k (allow ecf) [1]
Unit g/cm or g/mm consistent with e_1 [1]
- (b) (i) Appropriate method (can be written and/or in diagram)
e.g. measure half width of mass either side of 40 cm/mark centre of mass [1]
- (ii), (iii) and (iv) $l_2 > l_3$ and e_2 calculated [1]
- (v) M within range (180 – 220 g) (no ecf) [1]
2 or 3 significant figures [1]
- (c) Any two from:
rule bends
mass not exactly at 40 cm
mass may slip
end of rule may slip
hook not directly above 0 cm
spring extension not uniform/owtte
proportional limit exceeded
mass irregular/C of G not at centre/owtte
any other valid cause of inaccuracy [2]
- [Total: 10]**
- 2 (a) Units all correct (symbols or words) [1]
 t values inserted (0, 60, 120, 180, 240) [1]
 θ for white card increasing [1]
 θ for black card increasing at greater rate than θ for white card [1]
- (b) (i) Both temperature changes correct [1]
- (ii) Statement matching temperature changes (expect 'black')
with supporting comparative comment [1]
- (iii) Statement matching results (expect 'Yes' but allow ecf)
Figures from table supporting correct statement
and time interval mentioned [1]

Page 3	Mark Scheme	Syllabus	Paper
	IGCSE – October/November 2012	0625	53

- (c) Any one from:
- same (type of) lamp/same brightness
 - same distance/same height
 - same (type of) thermometer
 - same area of card
 - same thickness of card
 - good contact between card and thermometer (owtte)
 - same start temperature/allow thermometer to cool
 - allow lamp to cool
- [1]

Appropriate matching explanation:

- power output may not be the same (owtte)
 - different intensity of radiation (owtte)
 - respond differently/different heat capacity
 - different surface area to absorb radiant heat (owtte)
 - different rate of conduction (owtte)
 - rate of rise different at different temperatures
 - heating starts at different times
- [1]

[Total: 10]

- 3 (a) Correct symbol for voltmeter [1]
 Connected in parallel with lamp [1]

- (b) and (c) Units all correct (symbols or words) [1]
 All p.d.s < 7.0 V and to at least 1 d.p. [1]
 currents all < 1.00 A and to at least 2 d.p. [1]
 R calculations correct [1]
 Consistent 2 or 3 significant figures in R column [1]

- (d) Statement matches results (expect 'No') [1]
R figures quoted appropriately and matching statement [1]
 Mention of brightness related to temperature [1]

[Total: 10]

Page 4	Mark Scheme	Syllabus	Paper
	IGCSE – October/November 2012	0625	53

- 4 (a) and (b) Values of v in metres [1]
 To 3 significant figures [1]
 Correct values for $\frac{1}{v}$ (consistent with v values in table) [1]
- (c) Axes labelled (including units) and appropriate scales [1]
 Plots correct [1]
 Well judged straight line [1]
 Thin line and fine plots [1]
- (d) (i) and (ii) p and q values recorded and matching graph [1]
- (e) (i) and (ii) f within range 13.0 to 17.0 (or equivalent m/mm) [1]
 2 or 3 significant figures and appropriate unit [1]

[Total: 10]