CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the October/November 2012 series

0625 PHYSICS

0625/53 Paper 5 (Practical), maximum raw mark 40

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International Examinations

1 (a) (i) and **(ii)** l_o and l_1 clearly in cm/mm and $l_1 > l_o$ [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) [1]
Figures from table supporting correct statement
and time interval mentioned [1]

(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]

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]