CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the October/November 2012 series

0625 PHYSICS

0625/63 Paper 6 (Alternative to Practical), maximum raw mark 40

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1 **(a)** **(i)** and **(ii)** l_o = 2.0 and l_1 = 6.1 [1]

(iii) e_1 = 4.1cm unit required ecf from **1(a)(i)** and **1(a)(ii)** [1]

(iv) Correct calculation for k = 24/24.4 ecf from **1(a)(iii)** [1]
Unit g/cm [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) and **(iii)** e_2 seen and M = 190 g (no ecf) unit required for M [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 [2]

[Total: 9]

2 **(a)** 23 seen in correct place in table [1]

(b) **(i)** Units all correct (symbols or words) [1]

(ii) 10°C (or ecf from **2(a)**) and 23°C [1]

(iii) Statement matching temperature changes (expect 'black') with supporting comparative comment [1]

(iv) Statement matching results (expect 'Yes') [1]
Figures from table matching correct statement
and time interval mentioned at least once [1]

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(c) Any one from:
same (type of) lamp/same brightness
same distance/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: 8]

3 **(a)** Correct symbol for voltmeter [1]
In parallel with lamp [1]

(b) **(i)** Units all correct [1]

(ii) R values correct (10, 14, 18, 21) [1]
Consistent 2 or 3 significant figures in R column [1]

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

[Total: 8]

4 **(a)** **(i)** and **(ii)** u = 7.0 cm and v = 5.2 cm (or equivalent in mm) [1]

(iii) u = 0.350 and v = 0.260 in table (ecf) to 3 sf [1]

(b) Correct $\frac{1}{u}$ (2.86(ecf)) and $\frac{1}{v}$ (1.67, 2.55, 3.85 (ecf), 4.50, 5.10) [1]

(c) Axes labelled (including units) and appropriate scales [1]
Plots correct to ½ small square [1]
Well judged straight line [1]
Thin line and small plots [1]

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(d) **(i)** and **(ii)** *p* and *q* values there and matching graph [1]

(e) **(i)** and **(ii)** f within range 0.145 to 0.155 [1]
2 or 3 significant figures and appropriate unit [1]

[Total: 10]

5 **(a)** Discard 53 cm value [1]
Add remaining values together and divide by 4 [1]

(b) 75% [1]

(c) Greater than [1]
Height of release less but bounces to same height (owtte) [1]

[Total: 5]

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