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

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.

Cambridge is publishing the mark schemes for the October/November 2012 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

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

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

(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]

(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]

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

(e) **(i)** and **(ii)** f within range 0.145 to 0.155 [
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]