CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the October/November 2013 series

0625 PHYSICS

0625/61 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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International Examinations

1 **(a)** rule balanced and pivot at centre of mass [1]

(b) EITHER take readings from 50.2 cm mark
OR add mass/weight/load
OR place pivot at 50.2 cm mark [1]

(c) **(i)** cm, cm [1]

(ii) clockwise 77.5 (or 78) (N cm)
anticlockwise 78 (N cm) [1]

(d) EITHER repeats
OR estimate between two best positions that almost balance but tip opposite sides o.w.t.t.e
OR suitable method to locate centre of mass **Q** [1]

[Total: 5]

2 **(a)** 87 (^{o}C) [1]

(b) **(i)** s, ^{o}C, ^{o}C [1]

(ii)(iii) **B** and greater temperature difference
OR numbers quoted, *must see* 21 and 8 or 24 and 5 [1]

(iv) **A** 23(^{o}C) and **B** 40(^{o}C) [1]

(v) 20 – 26 (^{o}C) [1]

(c) EITHER viewing thermometer at right angles
OR reference to being ready on time [1]

(d) any two from:
room temperature
water / starting temperature
distance of thermometer bulb from water surface
relevant reference to draughts / fans / air conditioning [2]

[Total: 8]

3 **(a)** **(i)** 1.8 (V) [1]
0.3 (A) [1]

(ii) P_1 = 0.54 (W) e.c.f. allowed [1]

(iii)(iv)(v) P_T = 1.59 (or 1.6) W [1]

(b) statement matches results (expect YES) e.c.f. allowed [1]
justification in terms of within or beyond limits of experimental accuracy o.w.t.t.e. [1]

(c) **(i)** diagram:
lamps in parallel, variable resistor in series with power supply, with correct symbols for variable resistor, lamps and voltmeter [1]
one voltmeter correctly positioned [1]

(ii) vary current (or p.d.) [1]

[Total: 9]

4 **(a)** **(i)(ii)** u = 26 (mm) or 2.6 (cm) [1]
v = 44 (mm) or 4.4 (cm) [1]

(b) **(i)(ii)** 1144 mm^2 and 70 mm
OR 11.44 cm^2 and 7.0 (or 7) cm [1]
e.c.f. from **(a)**

(iii) x = 16 or 16.3 or 16.34 (1.6 or 1.63 or 1.634)
e.c.f. from **(b)(i)** and **(ii)** [1]

(c) f = 16 or 16.3 or 16.34 cm (160 or 163 or 163.4 mm) [1]
f given to 2 or 3 significant figures [1]

(d) up to 0.5 cm either side of 18.2 cm [1]

(e) any two from:
use of darkened room / brighter lamp / no other light interfering
mark position of centre of lens on holder
place metre rule on bench (or clamp in position)
ensure object and lens are same height from the bench
lens / object / screen perpendicular to bench
repeats
avoidance of parallax with action and reason [2]

[Total: 9]

5 **(a)** 54 – 55 [1]

(b) **(i)** table:
e values 12, 22, 36, 50, 60 (e.c.f. from **(a)**) [1]

(ii) graph:
axes correctly labelled *e* / mm and *F* / N and correct way round [1]
suitable scales [1]
all plots correct to ½ small square [1]
good line judgement [1]
thin, single continuous line [1]

(iii) triangle method using at least half of candidate's line, shown on the graph [1]
G = 11 – 13, no e.c.f. [1]

[Total: 9]