CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the October/November 2012 series

0625 PHYSICS

0625/62 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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1 Line 10 cm (± 0.1) (accept horizontal or vertical line) [1]
Normal correctly drawn [1]
Angle of incidence at 30° (± 2°) [1]
Pins at least 5 cm apart [1]

Any one from:
Thickness of lines (answer must refer to pencil lines, not light rays)
Difficulty in reading protractor to better than 2°
Thickness of pins [1]

[Total: 5]

2 **(a)** θ_R = 23 [1]
°C [1]

(b) **(i)** θ_A = 63 and **(ii)** θ_H = 14 (unit not required) ecf θ_R from **2(a)** [1]

(c) **(i)** θ_B = 36 and **(ii)** θ_W = 15 (unit not required) ecf θ_R from **2(a)** [1]

(d) Ratios calculated 4.5 and 2.4 ecf **2(b)** and **2(c)** [1]
Expect NO and ratios too different/not close enough (owtte), matching statement ecf wrong values from **2(b)** and **2(c)** [1]

(e) Any two from:
Room temperature/draughts/humidity/air conditioning (i.e. environmental factor)
Initial (water) temperature (cold or hot)
Amount of stirring
Time interval
Mass/volume/amount of water/water level
Size/surface area/material of beaker [2]

[Total: 8]

3 **(a)** Voltmeter symbol and position correct [1]

(b) Pointer in correct position [1]

(c) **(i)** I_1 = 0.84 A, I_2 = 0.33 A, I_3 = 0.50 A, all correct no significant figures penalty
Unit at least once and not contradicted [1]

(ii) No mark awarded

(iii) Sensible comment about experimental inaccuracy
e.g. difficulty in reading meter/scale or meter has a zero error [1]

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(d) Circuit: correct symbol for variable resistor (not potential divider) [1]
Variable resistor in a correct position [1]

(e) Workable solution, e.g. short circuit each in turn/exchange of lamp from other circuit branch/put lamps in parallel and check/use voltmeter to check pd across bulbs plus what is observed [1]

[Total: 7]

4 **(a)** Table: *uv* values 894, 990, 1090, 1155, 1194. Accept 3 or 4 significant figures. [1]
cm^2 and cm [1]

(b) Graph:
Axes correctly labelled and scales suitable [1]
(100 cm^2 = 2 cm on *y*-axis and 5 cm = 2 cm on *x*-axis)
All plots correct to ½ small square [1]
Good line judgement [1]
Thin, continuous line (penalise 'blobs') [1]

(c) **(i)** Triangle method used and shown [1]
Using at least half of line [1]

(ii) *f* = 14 – 16 (accept numbers rounding to 14/16) [1]
2 or 3 significant figures and unit [1]

[Total: 10]

5 **(a)** *l* value 10.5 (cm) / 105 (mm) [1]

(b) *l* value 52.5 / 525 (ecf) [1]
Both in cm/mm with unit stated at least once [1]

(c) Use blocks/protractor/set square; move ruler close to bob/lower bob
(Can score the mark from a well-drawn diagram) [1]

(d) *T* values 1.45, 1.47, 1.43, 1.44, 1.46 [1]
T values consistent 2 or 3 significant figures [1]
Table: cm, s, s [1]

(e) Description: little or no effect (owtte) allow ecf from **5(d)** [1]
Justification: *T* values very similar (owtte) [1]

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(f) Any one from:
Reduces human reaction error
Gives a more accurate value of *T*
T is too small/oscillations are too quick
Gives an average value (of *T*) [1]

[Total: 10]

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