



**MARK SCHEME for the October/November 2010 question paper
for the guidance of teachers**

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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Page 2	Mark Scheme: Teachers' version	Syllabus	Paper
	IGCSE – October/November 2010	0625	62

- 1 (a) *a* and *b* correct 2.3cm, 2.1cm [1]
- (b) (i) and (ii) *x* and *y* correct (10*a* and 10*b*)/(23cm, 21cm) [1]
- (iii) *m* correct arithmetic, in g (110/109.5(2)(g)) [1]
- (c) (i) and (ii) at least two values given for *w* and *t* [1]
more than two values given for *w* or *t* [1]
correct values for *w* and *t* (2.75 – 2.85cm, 0.4cm) [1]
- (iii) *V* calculation correct (110 – 114(cm³)) or ecf [1]
- (iv) density to 2 or 3 significant figures (0.960 – 1.00) or ecf [1]
unit g/cm³ [1]
- (d) centre of mass at 50cm mark/midpoint/middle (wtte) [1]

[Total: 10]

- 2 (a) *t* in s, θ in °C seen in BOTH [1]
(symbols or words (sec allowed but NOT degrees/centigrade))
- (b) 19 (°C) [1]
- (c) rate of heating greater (wtte) (can be included as part of justification) [1]
comparison given of changes in temperature with correct numbers [1]
- (d) any two from:
same (starting) temperature (wtte)
constant room temperature/draughts (wtte)/environment/place
carry out in same time intervals/duration/allow 'time' alone
same thermometer (wtte)
- NOT volume of water/location of thermometer/beaker/'temperature' alone
if > 2 responses, -1 for each additional incorrect (ignore 'neutrals') [2]

[Total: 6]

Page 3	Mark Scheme: Teachers' version	Syllabus	Paper
	IGCSE – October/November 2010	0625	62

- 3 (a) 2 – 2.1 (V) [1]
- (b) (i) R in Ω , V in V (symbols or words) [1]
- (ii) 10.1 [1]
- (c) graph:
 axes labelled and scales suitable (origin included) [1]
 all plots correct to nearest $\frac{1}{2}$ small square (must be visible) [2]
 (-1 for first incorrect plot, -2 for second)
 well judged best fit line/curve
 (allow 3 good plots on line with one anomaly) [1]
 thin (solid) line/neat plots to $<1/2$ square [1]
- (d) method clearly shown on graph
 (extension follows trend of line/curve, can be dotted)
 (contradictory calculation negates mark) [1]
 V correct to $\frac{1}{2}$ small square (ignore unit) expect 1.6 V approx [1]
 (allow candidate value for a 'reasonable' attempt at a line
 but not if clearly wrong trend or forced – e.g. to 2 or 0)

[Total: 10]

- 4 (a) (i) m value correct 1.8/1.84 (2/3 sf) [1]
 no unit [1]
- (ii) size = 2.9 – 3.1 cm high
 3.9 – 4.1 base
 (diagonal from RH top 48 – 52mm) [1]
 rectangle shape(by eye) with wire (seen in any rotation) [1]
 inverted [1]
- (b) placed on bench, related to vertical line on block
 OR clamped immediately above lens
 (either seen on diagram or in narrative) [1]
- (c) any two of:
 use of darkened room/bright light (wtte)
 moving lens back and forth to spot best image/move lens slowly
 marking position of centre of lens on block
 object & lens same height/all perpendicular to bench/all straight (parallax) if explained
 (allow 'look perpendicularly' but NOT 'eye level')
 repeats/take averages [2]

[Total 8]

Page 4	Mark Scheme: Teachers' version	Syllabus	Paper
	IGCSE – October/November 2010	0625	62

- 5 (a) three from:
 mass/amount/volume/level of salt
 implication of salt particle size (e.g. 'same type of salt')
 mass/volume/amount/level of water
 size/shape of beaker
 amount/rate of stirring
 NOT ref to temperature/room temperature/type of thermometer [3]

- (b) three from:
 clock : time
 thermometer : temperature
 balance : mass (NOT weight)
 measuring cylinder : volume
 NOT unit without quantity
 (but ignore incorrect unit with correct quantity) [3]

[Total: 6]