UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

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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1 (a) *a* and *b* correct   2.3cm, 2.1cm

   (b) (i) and (ii) *x* and *y* correct (10*a* and 10*b*)/(23cm, 21cm)   [

        (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* <u>or</u> *t*   [1]
                      correct values for *w* and *t*   (2.75 – 2.85cm, 0.4cm)   [1]

        (iii)   *V* calculation correct   (110 – 114(cm^3)) or ecf   [1]

        (iv)   density to 2 or 3 significant figures   (0.960 – 1.00) or ecf   [1]
               unit g/cm^3 [1]

   (d) centre of mass at 50cm mark/midpoint/middle (wtte)   [1]

                                                                                        [Total: 10]

2 (a) *t* in s, θ in $^{\circ}$C seen in BOTH
        (symbols or words (sec allowed but NOT degrees/centigrade)   [1]

   (b) 19 ($^{\circ}$C)   [1]

   (c) rate of heating greater (wtte) (can be included as part of justification)   [1]
        comparison given of changes in temperature <u>with correct numbers</u>   [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' <u>alone</u>
        if > 2 responses, -1 for each <u>additional</u> incorrect (ignore 'neutrals')   [2]

                                                                                        [Total: 6]

3 (a) 2 – 2.1 (V)

(b) (i) R in Ω, V in V (symbols or words)

    (ii) <u>10.1</u>   [1]

(c) graph:
axes labelled and scales suitable (origin included)   [1]
all plots correct to nearest ½ 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 ½ 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 <u>1.8/1.84</u> (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) <u>with wire</u> (seen in any rotation)   [1]
           inverted   [1]

(b) placed on bench, <u>related to vertical line on block</u>
OR <u>clamped</u> 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]

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 : <u>time</u>
thermometer : <u>temperature</u>
balance : <u>mass</u> (NOT weight)
measuring cylinder : <u>volume</u>
NOT unit without quantity
(but ignore incorrect unit with correct quantity)   [3]

[Total: 6]