MARK SCHEME for the May/June 2013 series

0625 PHYSICS

0625/53   Paper 5 (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 May/June 2013 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

1 (a) u and d recorded in consistent units [1]
correct calculation of m <u>and</u> no unit [1]

(b) h_0 and h_1 recorded and M calculated [1]
within 10% of m [1]

(c) statement matching results (expect 'Yes', Yes if < 10%, No if > 10%) [1]
justification matching statement
(expect 'within the range of experimental accuracy' o.w.t.t.e.
if 'No' expect 'outside range of experimental accuracy' o.w.t.t.e.) [1]

(d) inverted triangle [1]
edges blurred / hand in way of light [1]

(e) two suitable precautions, e.g.
darkened room / brighter lamp / lights not interfering
mark position of lens on holder
<u>object</u> and <u>lens</u> same height above bench
ruler fixed to bench
<u>all</u> apparatus vertical / right angles to bench
move screen back and forth (for sharp image)
repeats (to obtain average) [2]

[Total: 10]

2 (a) table:
units correct (symbols or words) [1]
θ near bottom of beaker decreasing [1]
θ near surface decreasing [1]
θ near surface – smaller/same change in 6 min compared to θ near bottom [1]

(b) statement matching results <u>and</u> justification matching statement (words or figures) with
specific mention of temperature <u>change</u> [1]
in <u>same time</u> [1]
(if 'no significant difference', need mention of 'within limits of experimental accuracy'
o.w.t.t.e.)

(c) appropriate precaution:
e.g. stir before reading / keep thermometer at same depth [1]
<u>matching</u> explanation:
e.g. ensure temperature is the same throughout / temperature different at different depths [1]

(d) appropriate precautions relating to <u>comparison</u>
any two from:
same size / thickness / surface area of beaker
same volume of water
same initial temperature of water
same room temperature / appropriate environmental condition [2]
IGNORE same thermometer / type of thermometer

[Total: 10]

3 (a) correct symbol for voltmeter [1]

(b–d) p.d. < 3.0 V <u>and</u> to at least 1 d.p. [1]
current < 1.00 A <u>and</u> to at least 2 d.p. [1]

(e) R calculations correct [1]
consistent 2/3 sig. figs. in R column [1]

(f) units all correct (symbols or words) [1]

(g) statement matches results (expect 'No', No if > 10%, Yes if < 10%) <u>and</u> R figures
quoted appropriately [1]
matching statement (need to see <u>too</u> different o.w.t.t.e.) [1]

(h) yes, as lamps are at different <u>brightness</u> (o.w.t.t.e.) [1]

(i) correct parallel connection [1]

[Total: 10]

4 (a) 5 values of h < 60 cm [1]
5 values of t, decreasing with increasing h [1]

(b) correct calculations of T and T^2 [1]

(c) axes labelled [1]
appropriate scales (plots occupying at least half grid) [1]
plots correct (to ½ square) [1]
well judged line, fine plots, thin neat line [1]

(d) triangle method seen on graph [1]
large triangle (at least ½ line) [1]

(e) appropriate precaution
e.g. take reading with eye line perpendicular to scale / use set square to ensure rule
vertical [1]
NOT just 'parallax' unless explained

[Total: 10]