**CAMBRIDGE INTERNATIONAL EXAMINATIONS**

**International General Certificate of Secondary Education**

# 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.

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**1** **(a)** *u* and *d* recorded in consistent units [1]
correct calculation of *m* and 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
object and lens same height above bench
ruler fixed to bench
all 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]
$\theta$ near bottom of beaker decreasing [1]
$\theta$ near surface decreasing [1]
$\theta$ near surface – smaller/same change in 6 min compared to $\theta$ near bottom [1]

**(b)** statement matching results and justification matching statement (words or figures) with specific mention of temperature change [1]
in same time [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]
matching explanation:
e.g. ensure temperature is the same throughout / temperature different at different depths [1]

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**(d)** appropriate precautions relating to comparison
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 and to at least 1 d.p. [1]
current < 1.00 A and 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%) and *R* figures quoted appropriately [1]
matching statement (need to see too different o.w.t.t.e.) [1]

**(h)** yes, as lamps are at different brightness (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]

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**(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]**

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