CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2013 series

0625 PHYSICS

0625/63 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.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

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1 **(a)** 24 (°C)

(b) units all correct (symbols or words) [1]
times 1, 2, 3, 4, 5, 6 (allow seconds if compatible with heading) [1]

(c) thermometer near bottom/no significant difference
and justification matching statement (words or figures) with mention/implication of temperature change [1]
in same time [1]

(d) 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]

(e) appropriate precautions relating to comparison
any two of:
same size/thickness/surface area of beaker
same volume of water
same initial temperature (of water)
same room temperature / appropriate environmental condition [2]

[Total: 9]

2 **(a)** appropriate precaution (can be written or diagram):
e.g. take reading with eye line perpendicular to rule / use set square to ensure rule vertical [1]

(b) *h* recorded, increasing and with consistent 2 or 3 sig. figs. [1]
H = 10.0, 19.5, 30.5, 39.0, 49.5 [1]

(c) *T* seen and T^2 = 1.96, 1.54, 1.18, 0.80, 0.40 [1]

(d) axes labelled with appropriate scales [1]
plots correct [1]
well judged line [1]
thin neat line, fine plots [1]

(e) *G* recorded to 2 or 3 sig. figs. (expect range (–)0.032 to (–)0.047)
and triangle method seen on graph, using at least half of line [1]

(f) appropriate change which improves reliability:
e.g. repeat readings for each length (and take average) / greater no. of oscillations [1]

[Total: 10]

3 **(a)** correct symbol for voltmeter

(b) **(i)** 2.59, 8.00, 3.91 [1]
consistent 2 or 3 sig. figs. [1]

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

(c) statement matches result (expect 'No') [1]
R figures quoted appropriately and matching statement
(need to see too different o.w.t.t.e.) [1]

(d) correct parallel connection [1]

[Total: 7]

4 **(a)** $V_1 = 66\,(cm^3)$ [1]
$V_2 = 83\,(cm^3)$ [1]

(b) density = 6.7 or 6.71 / allow e.c.f. [1]
unit g/cm^3 [1]

(c) suitable cause:
e.g. object not dried before measuring mass
mass measured after immersion
measuring cylinder not read at eye-level / parallax explained
measuring cylinder not read at meniscus (o.w.t.t.e.)
zero reading on balance not allowed for [1]

[Total: 5]

5 **(a)** u = 3.9 (cm) and d = 16.2 (cm)
m = 3.15/3.2 and no unit allow e.c.f.

(b) h_o = 2.0 (cm) and h_i = 6.5 (cm) [1]
M = 3.25 (2 or 3 sig. figs.) and no unit allow e.c.f. [1]

(c) statement matching results (expect 'Yes' but allow e.c.f.) [1]
justification matching statement
(expect 'within the range of experimental accuracy' o.w.t.t.e.) [1]

(d) **(i)** blurred edge / hand in way of light [1]
ensure focused properly / screen etc. vertical / attach scale/rule to screen /
use translucent screen, measure at back [1]

(ii) one suitable precaution (not used in **(d)(i)**) e.g.
darkened room
mark position of lens on holder
object and lens same height
ruler fixed to bench
all apparatus vertical/right angle to bench
move screen back and forth (to obtain sharp image) [1]

[Total: 9]