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

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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) [1]

(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 [1]

(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) [1]
m = 3.15/3.2 and no unit allow e.c.f. [1]

(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]