UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2012 question paper

for the guidance of teachers

0625 PHYSICS

0625/61 Paper 6 (Alternative to Practical), maximum raw mark 40

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1 **(a)** 50–250 g (or 0.05–0.25 kg) correct unit required [1]

(b) Centre of mass marked close to centre of cylinder [1]
Clear indication of how centre of mass is placed above the 90.0 cm mark [1]

(c) Rule unlikely to exactly balance/ difficult to balance
OR rule could slide on pivot
OR mass could slide
OR centre of mass of rule not at 50.0 cm mark
OR rule not uniform1

Do not accept comments about poor/careless technique [1]

(d) Repeat readings (wtte) [1]
OR a reference to finding exact position of centre of mass of metre rule
OR a reference to dealing with centre of mass of rule not being at 50.0 cm mark

(e) Good/ fine/ reasonable/ same to 3 significant figures
OR Within limits of experimental accuracy (wtte)
OR Too many significant figures in experimental result [1]

[Total: 6]

2 **(a)** θ_R = 22(°C) [1]

(b) Table:
mm, °C [1]
Correct *d* values 100, 80, 60, 40, 20, 10 [1]

(c) Temperature difference = 3(°C), higher [1]

(d) Draughts [1]
Room temperature/humidity [1]

(e) One from:
Relevant avoidance of parallax explained, in using rule or thermometer
Waiting time between readings
Wait for steady thermometer reading
Allow lamp to cool/warm up
Repeats and average [1]

[Total: 7]

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3 (a) (i) (cm, V, A) [no mark awarded]

(ii) Graph:
Axes correctly labelled with quantity and unit and correct way around [1]
Suitable scales – plots occupy at least half the grid [1]
All plots correct to ½ small square [1]
Good line judgement (ecf for curve if *d* plotted) [1]
Single, thin, continuous line [1]

(iii) Triangle using at least half of candidate's line clearly indicated on graph [1]
Evidence of subtraction seen [1]
G value 1.5 when rounded to 2 significant figures [1]

(b) Same as *G*, rounded to 2 or 3 significant figures [1]
unit Ω/ohms [1]

[Total: 10]

4 (a) *d* in range 79 to 80 (mm), 7.9 to 8.0 (cm) [1]
x = 61 (mm) and consistent correct unit for both (mm or cm) [1]
D = 80 (cm), *X* = 61 (cm) ecf from **(i)** and **(ii)** [1]

(b) *f* = 14.5(cm) allow ecf from **(a)** [1]
2 or 3 significant figures and correct unit [1]

(c) Correct statement for results (expect Yes or wtte) [1]
Idea of within (or beyond) experimental accuracy or wtte [1]
Can only score if previous mark is scored

(d) Any one from:
Use of darkened room
How to avoid parallax when taking readings
Movement of lens back and forth to obtain clearest image
Mark lens holder to show position of centre of lens
Metre rule clamped or on bench
Object, lens and screen all perpendicular to bench
Object and lens same height above bench [1]

[Total: 8]

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5 **(a)** $V_1 = 74$ [1]
Line of sight perpendicular to scale [1]
Perpendicular line continues to measuring cylinder at surface level [1]

(b) $V_2 = 81$, $V_G = 7$ (ecf allowed) [1]
All volumes in cm^3, unit given at least once, not contradicted [1]

(c) $(V_3 - V_1) = 24$, $V_A = 17$ (ecf allowed) [1]

(d) Any three from:
V_A: Finger increases V_3 / tube not pushed in far enough
Some water in test-tube/air is compressed
V_W: Water remaining in tube
Water remaining in measuring cylinder
Tube overfilled, wtte (surface tension effect) [3]
Either V_A or V_W (accept only once):
Measuring cylinder readings not very sensitive
Subtraction produces large percentage uncertainty

[Total: 9]

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