

CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International General Certificate of Secondary Education

MARK SCHEME for the October/November 2014 series

0625 PHYSICS

0625/52

Paper 5 (Practical), maximum raw mark 40

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Page 2	Mark Scheme	Syllabus	Paper
	Cambridge IGCSE – October/November 2014	0625	52

- 1 (a) (i) h , w and d recorded in cm and sensible, accept 2.0 – 5.0 cm [1]
- (ii) V_A present and h , w , d all to nearest millimetre [1]
- (iii)(iv) m recorded and density calculated correctly [1]
- density between 2.0 and 3.5 (g/cm^3) [1]
- (b) (i) sensible d value – not smaller than all of h , w , d [1]
- (ii) diagram showing blocks and rule correctly used – blocks touching the sphere, and rule spanning gap and touching blocks [1]
- (c) V_1 90 – 110 cm^3 , V_2 larger [1]
- V_B correctly calculated and sensible, with unit cm^3 [1]
- (d) any two from:
 measuring cylinder not sensitive
 some clay left on fingers
 cube not perfectly shaped/difficult to measure
 air bubbles clinging to modelling clay/within the modelling clay
 volume of string
 difficult to judge the bottom of the meniscus/bubble on meniscus [2]
 ignore parallax
 do not credit poor experimental practice e.g. spills or splashes

[Total: 10]

Page 3	Mark Scheme	Syllabus	Paper
	Cambridge IGCSE – October/November 2014	0625	52

- 2 (a) sensible cold water temperature (accept $15(^{\circ}\text{C}) - 50(^{\circ}\text{C})$) [1]
- (b) table:
 correct V values 10, 20, 30, 40, 50 [1]
 temperatures decreasing, evidence of temperatures to at least 1°C [1]
 final interval less than initial interval [1]
- (c) t_2 more than t_1 [1]
 R_1 and R_2 correct [1]
 cm^3/s [1]
- (d) rate / flow is not constant [1]
- (e) any two from:
 room temperature / air conditioning
 initial / hot water temperature
 volume / quantity / amount of hot water
 cold water temperature
 intervals / time between adding volumes of water [2]
 ignore draughts / humidity / pressure

[Total: 10]

- 3 (a) V to at least 1 d.p. and $< 3V$ and increasing [1]
 all column headings with correct unit cm , V , A , Ω [1]
- (b) graph:
 axes correctly labelled and correct orientation [1]
 suitable scales, plots using more than half available axes [1]
 R values calculated and plotted correct to $\frac{1}{2}$ small square [1]
 good line judgement, thin, continuous, [1]
 do not allow 'blobs' greater than half square diameter
- (c) triangle method shown on graph [1]
 G calculation correct using large triangle [1]
- (d) R_1 value to 2 or 3 significant figures [1]
 R_1 value about $2 \times$ value at 0.5 m [1]

[Total: 10]

Page 4	Mark Scheme	Syllabus	Paper
	Cambridge IGCSE – October/November 2014	0625	52

- 4 first ray trace:
normal at 90° in correct position (2.0 cm from **A**) [1]
angle of incidence $30^\circ \pm 1^\circ$ [1]
all lines present and neat [1]
emergent ray parallel to **EF** [1]
second trace:
complete and neat [1]
- (h) r value correct to $\pm 1^\circ$ [1]
- (j) r value correct to $\pm 1^\circ$ and within 2° of first value [1]
- (k) idea of within (or beyond) limits of experimental accuracy [1]
- (l) any two from:
viewing bases of pins/ensure that pins are vertical/not bent
large pin separations
use of repeats
use of thin pencil lines (or equivalent comment)
close one eye (when aligning pins)
use thin/sharp pins [2]
ignore parallax error
NOT dark room

[Total: 10]