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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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 owtte
     some clay left on fingers
     cube not perfectly shaped / difficult to measure owtte
     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]

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2 (a) sensible cold water temperature (accept 15(°C) – 50(°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 < 3 V 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 ½ 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]

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4 first ray trace:

normal at 90° in correct position (2.0 cm from **A**) [1]

angle of incidence 30° ±1° [1]

all lines present and neat [1]

emergent ray parallel to **EF** [1]

second trace:

complete and neat [1]

(h) *r* value correct to ±1° [1]

(j) *r* value correct to ±1° 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**]

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