

**CAMBRIDGE INTERNATIONAL EXAMINATIONS**

Cambridge International General Certificate of Secondary Education

**MARK SCHEME for the October/November 2014 series****0625 PHYSICS****0625/62**

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

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- 1 (a) (i)  $h = 2.5$ ,  $w = 2.7$ , and  $d = 2.7$  [1]
- (ii)  $V_A = 18.225 \text{ (cm}^3\text{)}$  to 2 or more sig. figs. ecf (i) [1]
- (iii) density =  $3.22 \text{ g/cm}^3$  to 2 or 3 sig. figs. ecf (ii) [1]  
unit needed, penalise additional sig. figs.
- (b) diagram showing blocks and rule correctly used – blocks touching the sphere, and rule spanning gap and touching blocks [1]
- (c) (i)  $V_1 = 66 \text{ (cm}^3\text{)}$  [1]
- (ii) line of sight at right angles to measuring cylinder [1]
- (d)  $V_B = 18 \text{ (cm}^3\text{)}$  ecf from candidate's  $V_1$  [1]
- (e) 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: 9]

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- 2 (a) 19 (°C) cao [1]
- (b) table:  
 cm<sup>3</sup>, °C [1]  
 NOT C°, centigrade
- correct V values 10, 20, 30, 40, 50 [1]
- (c) lid/insulation/polystyrene cup/minimal time delay [1]
- (d)  $R_1 = 2.00$   $R_2 = 1.4(3)$  [1]  
 note: do not give the mark if using incorrect stopwatch reading e.g. 35.5 rather than 35.05
- cm<sup>3</sup>/s [1]
- (e) rate/flow is not constant [1]
- (f) 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: 9]**

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- 3 (a) all units correct: m, V, A,  $\Omega$  – symbols and/or words [1]
- (b) graph: [1]  
 axes correctly labelled and correct orientation [1]  
 suitable scales, plots using more than half available axes [1]  
 all plots correct to  $\frac{1}{2}$  small square [1]  
 good line judgement, thin, continuous, [1]  
 note: do not allow 'blobs' greater than half square diameter
- (c) triangle method shown on graph [1]  
 note: do not allow use of  $y/x$  if graph does not go to origin
- G using large triangle / half of candidate's line used [1]  
 note: second mark can be given from coordinates used in equation if nothing shown on graph
- (d)  $R_1$  value to 2 or 3 significant figures – ignore unit [1]  
 note: this mark does not depend on actual value being correct
- $R_1$  in range 5.8 to 6.2  $\Omega$   
 OR accept  $R_1 = G$  value if outside tolerance [1]
- [Total: 9]**
- 4 (a) refracted ray in correct position and at  $20^\circ \pm 1$  [1]
- (b) emergent ray in correct position and approximately parallel with incident ray [1]  
 note: allow a  $3^\circ$  tolerance
- all lines present and neat [1]
- (c) (i)  $P_3P_4$  distance far apart, at least 5.0 cm [1]
- (ii) any two from: [2]  
 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  
 ignore parallax error  
 NOT dark room
- (d) idea of within / beyond limits of experimental accuracy [1]
- [Total: 7]**

Page 5	Mark Scheme	Syllabus	Paper
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- 5 (a) tape measure [1]
- (b) (i) symbols for ammeter, voltmeter and resistor (for copper wire) correct [1]  
 note: accept in wrong places for this mark
- variable resistor or potential divider present with symbol [1]  
 NOT if labelled “copper wire”
- ammeter in series and voltmeter in parallel with copper wire/resistor [1]  
 note: do NOT award this mark if there is no power supply
- (ii) observe current shown on ammeter (ignore any reference to a voltmeter) [1]  
 accept change variable resistor/use rheostat (to see if it then glows)  
 accept ‘change current’ as meaning changing variable resistor  
 ignore checking wires or changing power supply or use of a voltmeter  
 accept connect lamp directly across supply
- (iii) no, deflection too small/range too large (owtte) [1]  
 accept ‘scale’ for range  
 accept suggestion of alternative maximum meter  
 accept readings not precise enough/sensitivity not sufficient;  
 accept accurate for precision, ignore misuse of ‘reliable’  
 ignore ‘circuit voltage not large enough’

**[Total: 6]**