

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 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:
 cm³, °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
- cm³/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, Ω – 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 Ω
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° 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]