Cambridge
O Level

Cambridge International Examinations
Cambridge Ordinary Level

PHYSICS **5054/41**

Paper 4 Alternative to Practical **October/November 2016**

MARK SCHEME

Maximum Mark: 30

Published

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1 **(a)** correct subtraction 51.3(g) seen B1
3.664 / 3.66 / 3.7 g B1

(b) any 2
temperature
position e.g. in sun
draughts
humidity B2

(c) any sensible apparatus e.g. heater / sun lamp / fan B1

[Total marks: 5]

2 **(a)** car drawn at bottom of ramp B0
distance l marked correctly B1

distance *h* marked correctly B1

(b) metre rule / half metre rule/ruler/tape (measure) B1
accuracy e.g. use of set square to ensure vertical/ avoid parallax error explained B1

(c) **(i)** large variation in data for each reading (so this degree of accuracy is enough) B1

(ii) table completed 123, 153, 188 B2
one or two correct and to the nearest cm - 1 mark
all correct more than 3sf – 1 mark

(iii) axes labelled quantity and unit
axis labels correct way round B1

scales linear, not awkward, start from (0,0) B1

points plotted accurately B1

best fit curve drawn B1

(iv) as *h* increases l_{av} increases B1

(d) range 2.5 to 2.9 (cm) B1

[Total marks: 13]

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3 **(a)** ammeter in series with correct symbol B1
voltmeter in parallel with correct symbol B1

(b) **(i)** 1.2 A and 8.6 V B1

(ii) 1125.818… B1
1100 J / (kg °C) B1

(c) any 2 sensible suggestions e.g. B2
aluminium block not lagged / heat loss (to air)
did not wait for thermometer to reach maximum after power is switched off
did not ensure heater fully immersed in block
no oil to improve thermal conductivity with heater or thermometer
zero errors on meters

[Total marks: 7]

4 **(a)** means of measuring more than one diameter described B1
measures at least 5 and averages B1
accuracy detail e.g. use of set squares described/ensure all straws are touching B1

(b) (Fill straw with water) and use measuring cylinder B1
accuracy detail e.g. 5 or 10 cm^3 measuring cylinder used B1
or burette or pipette used
or repeat and average
or filling 10 / all straws / a number of straws

[Total marks: 5]

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