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Cambridge Assessment International Education

Cambridge IGCSE®

PHYSICS **0625/06**

Paper 6 Alternative to Practical **For examination from 2020**

MARK SCHEME

Maximum Mark: 40

Specimen

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mark scheme abbreviations

( )	the word, phrase or unit in brackets is not required but is in the mark scheme for clarification
accept	accept the response
AND	both responses are necessary for the mark to be allowed
c.a.o.	correct answer only
e.c.f.	error carried forward; marks are awarded if a candidate has carried an incorrect value forward from earlier working, provided the subsequent working is correct
ignore	this response is to be disregarded and does not negate an otherwise correct response
NOT	do not allow
note:	additional marking guidance
/ OR	alternative responses for the same marking point
owtte	or words to that effect
underline	mark is not allowed unless the underlined word or idea is used by candidate
units	there is a maximum of one unit penalty per question unless otherwise indicated
any [number] from:	accept the [number] of valid responses
max	indicates the maximum number of marks

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1 **(a)** table:
at least 2 *d* values correct: 30.0, 24.2, 19.8, 17.2, 15.0 (cm) to ± 0.5 cm
(accept values 50–*d*) [1]
rule readings subtracted from 50 cm [1]
all 5 *d* values correct: 30.0, 24.2, 19.8, 17.2, 15.0 (cm) to ± 0.2 cm [1]
1/*d* values correct (note: at least 2 significant figures) [1]

(b) any one difficulty and corresponding solution from:
difficulty obtaining balance as rule tips one way then the other
allow to tip one way then the other and take average

mass obscuring marks on rule
mark centre of the mass so it can be read against rule
OR take average of right hand and left hand readings for mass position

mass sliding off rule
OR rule sliding off pivot
suitable means for preventing mass or rule sliding [max 2]

(c) graph:
axes labelled with quantity and unit [1]
scales suitable, plots occupying at least half grid [1]
plots all correct to ½ square (take centre of plot if large) [1]
well-judged thin line (≤ ½ square) [1]

(d) triangle <u>method</u> used and <u>shown</u> (any indication on graph) using at least half line
(can be seen in calculation) [1]

(e) $\mu = 27 – 33$ (g) to 2 or 3 significant figures [1]

2 **(a)** 23 (°C) [1]

(b) any one from:
wait for thermometer reading to stop rising
eye level with top of (mercury) thread owtte
stir water [max 1]

(c) s, °C, °C, words or symbols AND
30, 60, 90, 120, 150, 180 [1]

(d) uninsulated (owtte) OR no significant difference [1]
justified by reference to temperature <u>differences</u> and <u>time</u> [1]
relevant science, consistent with readings and conclusion
(e.g. therefore cotton wool is a good/not a good insulator OR most cooling is due to
convection or radiation etc.) [1]

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(e) quality poor due to small temperature differences [1]

any two improvements from:
increase initial temperature of water
ensure initial temperatures are identical
use a lid
stir to eliminate differences between top and bottom of the water
use thicker insulation
use more sensitive thermometer or datalogger [max 2]

(f) any two from:
laboratory temperature
draughts/open windows
accept temperature of hot water source [max 2]

(g) 5–50 cm^3 [1]

3 **(a)** correct symbol [1]
correct position [1]

(b) table:
1.68 (V) [1]

(c) (brightness) decreases (as length increases) [1]

(d) statement: no [1]
justification matches statement and by reference to results
e.g. V / l not constant, as l increases V decreases, V does not double as l doubles [1]

(e) any one from:
width of sliding contact
achieving exact same position on wire
accept heating changes resistance of wire
accept other sensible practical reason [max 1]
NOT human error

(f) do not touch (bare/hot) wire
OR do not allow C to touch terminal between lamp and supply [1]

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4 **(a)** apparatus:
measuring cylinder/jug OR ruler OR balance (to measure amount of water) [1]
protractor OR rule to measure height of raised surface
OR other means of measuring angle of tilt
OR newtonmeter to apply variable force
OR other method of applying quantifiable force [1]

instructions:
method of tilting or applying variable force and measuring point at which bottle topples [1]

attention to accuracy, any two from:
just starts to topple
slowly
repeats / more than 10 values for quantity of water
very large protractor
or any other suitable precaution which would improve accuracy of data [max 2]

values:
at least 5 values with range at least 1500 cm^3 or 30 cm or 1500 g, approximately evenly spaced [1]

graph:
plot of measured variable (angle or height or force) against quantity of water (volume or height or mass) (accept vice versa) [1]

(b) 20° [1]

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