



Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

PHYSICS

0625/62

Paper 6 Alternative to Practical

May/June 2018

MARK SCHEME

Maximum Mark: 40

Published

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This document consists of **8** printed pages.



Question	Answer	Marks
1(a)(i)	2 or more <u>measurements</u> seen $D_B = 4.8 \pm 0.1$ (cm)	1
1(a)(ii)	$D = 6.\underline{0}$ (cm)	1
1(b)	1 $h = 7.8$ (cm) AND 2 $V = 220(.428)$ (cm ³)	1
1(c)	$\rho = 1 / 1.1 / 1.05(\dots\dots)$	1
	2 or 3 significant figures	1
	g / cm ³	1
1(d)	any one from: part (a) drawn circle not exact / thickness of rim or cup / thickness of the pencil line part (b) difficult to measure the height (in practice) / D^2 increases inaccuracy in D part (c) mass of cup has been ignored	1
1(e)	diagram showing clearly: line of sight perpendicular to measuring cylinder to the bottom of the meniscus	1

Question	Answer	Marks
2(a)	$\theta_R = 23(0) (^{\circ}\text{C})$	1
2(b)(i)	ensure thermometer / bulb / alcohol / mercury has reached the temperature of the water	1
2(b)(ii)	s / seconds, $^{\circ}\text{C}$	1
2(b)(iii)	t values 30, 60, 90, 120, 150	1
2(b)(iv)	graph:	
	axes correctly labelled and right way round	1
	suitable scales (scales must start below θ_R)	1
	all plots correct to $\frac{1}{2}$ small square	1
	good line judgement, thin, continuous line	1
2(c)	<u>horizontal line</u> at θ_R correctly positioned	1
2(d)	any two from: perpendicular viewing of thermometer stir (before taking temperature reading) don't let the thermometer (bulb) touch the sides / bottom of beaker wait for thermometer to reach θ_{MAX} before reading	2
2(e)	any two from: higher starting temperature / use hotter water use of metal can instead of beaker / metal bench lower room temperature / cold water bath use of a fan container with a greater surface area / larger beaker	2

Question	Answer	Marks
3(a)(i)	$v = 5.8(0) \text{ (cm)} / 58 \text{ (mm)}$	1
3(a)(ii)	$V = 29(.0) \text{ (cm)}$	1
3(a)(iii)	$f_1 = 11.8(3673) / 12 \text{ (cm)}$	1
3(b)	$f_A = 12.0 \text{ (cm)}$	1
	2 or 3 significant figures	1
3(c)	at least 3 new values suggested	1
	all new values between 15 cm and 70 cm with at least 5 cm between each value	1
3(d)	any two from: use of darkened room / brighter lamp mark position of centre of lens on holder place metre rule on bench / clamp in position ensure object and (centre of) lens are same height (from the bench) object <u>and</u> lens <u>and</u> screen perpendicular to bench move screen slowly / back and forth to obtain best image	2

Question	Answer	Marks
4	method to include:	
	place truck on ramp (and release)	1
	measure distance (travelled) from bottom of ramp	1
	repeat with different mass(es) (loaded on the same truck)	1
	additional apparatus:	
	(metre) rule(r) / measuring tape	1
	control variables:	
	height / angle of ramp / number of supporting bricks	1
	release position / height above bench	1
	table with clear columns for mass, and distance travelled, with appropriate units <u>in the headings of the table</u>	1

Additional graph notes:

NOTE: The principle to apply here is ‘could I draw a significantly better line, using these points, under examination conditions?’ If the answer is definitely ‘yes’, do not award the mark.

- NOTE: – If candidate’s scale consists of actual readings at equal intervals this will produce a perfect straight line! The only marks available in this case are the first (axes right way round and labelled) So maximum 1.
- If axes are wrong way round, the other 3 marks are still available.