



Cambridge Assessment International Education
Cambridge Ordinary Level

PHYSICS

5054/32

Paper 3 Practical Test

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MARK SCHEME

Maximum Mark: 30

Published

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This document consists of **4** printed pages.

Question	Answer	Marks
1(a)(i)	t_1 in the range 6.0 (s) to 10.0 (s) using at least one repeat measurement with correct average	B1
1(a)(ii)	T_1 calculated correctly to 2 / 3 s.f. with consistent correct unit seen somewhere in (a) or (b)	B1
1(b)	$t_2 > t_1$ and $T_2 > T_1$	M1
1(c)	ratio calculated correctly with no unit and in the range 1.34 to 1.48	A1
1(d)	referring to their % difference calculated in (i) and sensible comment made. e.g. agrees because % difference is small (<5%) does not agree because % difference large (>10%) for 5–10% accept either argument	B1

Question	Answer	Marks
2(a)(i)	V_1 in the range 3.0 (V) to 4.5 (V) to 0.1 (V) or better	B1
2(a)(ii)	$V_2 < V_1$ to 0.1 V or better with consistent correct unit seen here or in (i)	B1
2(b)	correct calculation of resistance of X values	M1
	resistance for the ice and water mixture in range of 1.5 times to 4.0 times that of room temperature	A1
2(c)	as the temperature increases the resistance of X decreases owtte . or statement consistent with the candidate's results	B1

Question	Answer	Marks
3(b)(i)	x measured to the nearest mm with unit	B1
3(b)(ii)	lift the sphere vertically / upwards out of the sand tray (without disturbing the sand)	B1
3(b)(iii)	x from at least two readings correctly averaged	B1
3(c)(i)	5 × (b)(i) or (b)(iii) answer	B1
3(c)(ii)/(iii)	new x present, and larger than (b)(iii) and valid conclusion and comparison of values in (c)(i) and (c)(ii) based on student's results	B1

Question	Answer	Marks
4	<u>Preliminary results</u>	
4(a)(i)	measured height above the bench at two places and made sure that they were the same / aligned with horizontal surface in the laboratory	B1
4(a)(ii)	displace the rule from its horizontal / original / starting position and see that it returns to its horizontal / original / starting position	B1
4(a)(iii)	L in the range 4.0 cm to 8.0 cm measured to the nearest mm with unit	B1
4(b)	new L > L from (a) (iii) and measured to the nearest mm with unit and M = 20(.0) (g)	B1

Question	Answer	Marks
<u>Table</u>		
4(c)	table with headings and units and results from (a)(iii) ($M=0$) and (b) ($M=20$) included	B1
	at least one result with $90 \text{ g} \leq M \leq 100 \text{ g}$	B1
	even distribution of results, e.g. no change of mass $> 20 \text{ g}$	B1
	at least 5 results showing correct trend, L increases as M increases	B1
	L values in table to nearest mm oe and M values to a maximum of 1 d.p	B1
<u>Graph</u>		
4(d)	axes labelled with units and correct orientation	B1
	suitable scale, not based on 3, 6, 7 etc. with plotted data occupying $\geq$ half the grid in both directions	B1
	points plotted correctly	B1
	best fit fine straight line	B1
<u>Calculations</u>		
4(e)	use of two points that are on the straight line	M0
	correct calculation of G	A1
	from a triangle that uses more than half the drawn line with answer to 2 / 3 s.f.	A1