Cambridge O Level

Cambridge Assessment International Education
Cambridge Ordinary Level

PHYSICS **5054/32**

Paper 3 Practical Test **October/November 2017**

MARK SCHEME

Maximum Mark: 30

Published

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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**

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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	**Preliminary results**	
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**

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Question	Answer	Marks
Table		
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 g ⩽ *M* ⩽ 100 g	**B1**
	even distribution of results, e.g. no change of mass > 20 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**
Graph		
4(d)	axes labelled with units and correct orientation	**B1**
	suitable scale, not based on 3, 6, 7 etc. with plotted data occupying ⩾ half the grid in both directions	**B1**
	points plotted correctly	**B1**
	best fit fine **straight line**	**B1**
Calculations		
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**

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