

Cambridge International Examinations Cambridge Ordinary Level

PHYSICS

5054/31 October/November 2016

Paper 3 Practical Test MARK SCHEME Maximum Mark: 30

Published

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Page 2		2	Mark Scheme Syllabus		Paper	
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1	(a)	(i)	L_0 measured to the nearest mm or better and in the range 1.5 cm to with consistent unit seen here or in (a)(ii), (a)(iii), (b)(i) or (b)(ii)	3.0 cm	B1	
	(ii)	(iii)	L_1 recorded to the nearest mm or better and e_1 calculated correctly consistent unit seen here or in (a)(i) , (b)(i) or (b)(ii)	with	B1	
	(b)	e ₂	< <i>e</i> ₁ .		M1	
	(c)	ρC	alculated correctly to 2/3s.f. with unit		A1	
		va	ue in range 1.0g/cm ³ to 2.0g/cm ³		A1	[5]
2	(a)	(i)	bottom of the threads are separated by 30.0 cm so the top of the the must be separated by the same distance <i>owtte</i> /vertical alignment v stands/doorframe etc	reads vith	B1	
		(ii)	ensure that the half-metre rule is horizontal by measuring the heigh the bench at each end and finding that they are the same. or aligning with a horizontal line in the room, e.g. windowsill / top of	t above door	B1	
	(b)	<i>t</i> ir rep	the range 8s to 16s with unit seen somewhere in (b) and using at le beat measurement with correct average	east one	B1	
		Τc	alculated correctly to 2/3 s.f. with unit seen somewhere		B1	
		<i>T</i> i	n the range 1.0s to 1.4s, when rounded		B1	[5]
3	(a)	V ₁ an	in the range 0.55 V to 0.90 V to 0.01 V or better with unit seen here or d I_1 in the range 0.30 A to 0.50 A to 0.01 A or better with unit seen her	r in (c) re or in (c)	B1	
	(b)	CO	rrect calculation of R_1 in the range 1.0Ω to 3.0Ω with unit seen here of	or in (d)	B1	
	(c)	V ₂ in	< V_1 and in the range 0.55 V to 0.90 V to 0.01 V or better with unit see (a)	en here or		
		an or	d $I_2 < I_1$ and in the range 0.14 A to 0.27 A to 0.01 A or better with unit in (a)	seen here	B1	
	(d)	CO	rrect calculation of R_2 with $R_2 > R_1$ with unit seen here or in (b)		B1	
	(e)	wh an co	en the current decreases, the voltage across the diode decreases (sl d the resistance of the diode increases or vice versa and mment consistent with results	ightly)	B1	[5]

Pa	age (3	Mark Scheme	Syllabus	Pape	ər					
			Cambridge O Level – October/November 2016	5054	31						
4	Preliminary results										
	(a)	(i)	Approached the formation of the sharp image on the screen from be directions.	oth	B1						
		(ii)	$u_{\rm S}$ in the range 79.0 cm to 84.0 cm.		M1						
			Repeated measurements, correctly averaged with unit seen here or	r in (b)(i)	A1						
	(b)	(i)	$u_{\rm L}$ in the range 16.0 cm to 21.0 cm with unit seen here or in (a)(ii).		B1						
		(ii)	d and y calculated correctly (ignore units and s.f.)		B1	[5]					
	(c)	Ta	ble								
		col (a)	umn headings for <i>D</i> , <i>u</i> _S , <i>u</i> _L , <i>d and y</i> and units for <i>D</i> , <i>d</i> and <i>y</i> and resu (ii) and (b) included	Its from	B1						
		coi	rrect calculation of <i>d</i> and <i>y</i>		B1						
		D١	values in the range 65.0 cm $\leq D \leq$ 95.0 cm		B1						
		at	east 5 results showing correct trend, <i>y</i> increases as <i>D</i> increases		B1	[4]					
	(d)	<u>Gr</u>	<u>aph</u>								
		axe (all	es labelled with units and correct orientation. ow e.c.f. from wrong unit in table but not no units)		B1						
		sui pa	table scale, not based on 3, 6, 7 etc. with plotted data occupying \ge high point of the directions.	alf the							
		(all	ow origin, if present, to be included)		B1						
		two ma (po	o points plotted correctly – check the two points furthest from the line. rk can only be scored if the scale is easy to follow ints must be within ½ small square of the correct position)	This	B1						
		be: (lin	st fit fine straight line and fine points or crosses e thickness to be no greater than the thickest lines on the grid)		B1	[4]					
	(e)	<u>Ca</u>	Iculations								
		use the	e of two points that are on the straight line or two points on a tangent curve.	drawn to	M0						
		(i)	use of a triangle that uses more than half the drawn line to calculate gradient	e the	A1						
		(ii)	f in the range 13 (cm) to 17 (cm). (Ignore s.f. and unit)		A1	[2]					