

Cambridge International Examinations

Cambridge Ordinary Level

PHYSICS 5054/32

Paper 3 Practical Test

October/November 2016

MARK SCHEME

Maximum Mark: 30

Published

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1	(a)	<i>t</i> in	the range 0 (mm) to 4 (mm)		B1	
	(b)	(i)	sensible value of <i>D. R</i> epeats shown and correctly averaged, measu nearest mm or better	red to the	B1	
		(ii)	clear description or clear diagram of how values of <i>D</i> obtained accu	rately.	В1	
			eye vertically above edge of lens on scale / set square used against edge of lens, resting on scale / measurements in two different orientations shown.			
	(c)	(i)	diagram showing set square on each side of the lens (like the jaws of vernier callipers)			
		(ii)	and sensible T in the range $t < T \le 10 \mathrm{mm}$		B1	
	(d)		rect calculation of f giving an answer in the range 7.5 cm to 30.0 cm was istent unit with elsewhere in (a) , (b)(i) or (c)(ii) . (Ignore s.f.)	rith	B1	[5]
2	(a)	dec	creases <i>owtte</i>		B1	
	(b)(i)(ii)	T_1 = their $t_1/10$		В1	
			T_1 given to 2/3 s.f. Correct unit seen in (b) or (c)		В1	
	(c)	<i>t</i> ₂ >	t_1		B1	
	(d)	T ₂ /	T_1 in the range 1.0 to 1.2 when rounded (ignore unit)		B1	[5]
3	(a)		n the range 1.8 V to 2.8 V to 0.1 V or better with unit seen here or in (I $_1$ I in the range 0.18 A to 0.28 A to 0.01 A or better with unit seen here b)	•	B1	
	(b)		$V_2 > V_1$ and in the range 2.4 V to 4.0 V to 0.1 V or better with unit seen here or in (a) and $I_2 < I_1$ and in the range 0.10 A to 0.20 A to 0.01 A or better with unit seen here or in (a).			
		and			B1	
	(c)	-	creasing the resistance) reduces the current which increases the voltr ding or vice versa	neter	B1	
	(d)		rect calculation of <i>R</i> from their (a) and (b) e – B0 if sign error in calculation		B1	
		R ir	the range 6.0Ω to 20.0Ω to $2/3$ s.f. and unit		B1	[5]

Mark Scheme

Syllabus

Paper

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4 Preliminary results

(a) y measured to the nearest mm or better and in the range 1.5 cm to 3.0 cm with consistent unit seen here or in (b) **B1** (b) (i) x in the range 39.6 cm to 40.4 cm to nearest mm or better and with consistent unit seen here or in (a) or (b)(ii) **B1** (ii) correct determination of e in the range 9 cm to 14 cm with unit seen here or in (a) or (b)(i) **B1** (iii) diagram or explanation measured the height of the metre rule above the bench in at least 2 places (and found to be equal)/Horizontal alignment with window sill/top of door etc. **B1** [4] **Table** (c) column headings with units for x, L and e and results from (b) included B1 correct calculation of e **B1** $\Delta x \ values \ge 50 \ cm$ **B1** [4] at least 5 results showing correct trend, e increases as x increases B1 **Graph B1** (d) axes labelled with units and correct orientation (allow e.c.f. from wrong unit in table but not no units) suitable scale, not based on 3, 6, 7 etc. with plotted data occupying ≥ half the **B1** page in both directions two points plotted correctly – check the two points furthest from the line. This mark can only be scored if the scale is easy to follow **B1** (points must be within ½ small square of the correct position) best-fit fine straight line and fine points or crosses **B1** [4]

(line thickness to be no greater than the thickest lines on the grid)

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Calculations

(e)	correct readings used for a pair of points on the line used for the gradient determination				
	(triangle seen or implied)	B1			
	more than half the drawn line used for points	B1			
	correct calculation of gradient in the range 0.2 to 0.3 when rounded (ignore unit)	B1	[3]		