



Cambridge International Examinations
Cambridge Ordinary Level

PHYSICS

5054/41

Paper 4 Alternative to Practical

May/June 2017

MARK SCHEME

Maximum Mark: 30

Published

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Question	Answer	Marks
1(a)(i)	decelerating	B1
1(a)(ii)	less distance travelled in equal time / 0.020 s	B1
1(b)	table of two columns – one with heading time / s (or t / s)	B1
	second column with heading distance / cm (or d / cm or s / cm)	B1
	correct data in table – any 3 correct lines	C1
	4 correct lines	A1
1(c)	$12 / .06 = 200 \text{ cm / s}$ or 2 m / s	B1

Question	Answer	Marks
2(a)	35.4 (s)	B1
2(b)	axes labelled quantity and unit axes correct way round	B1
	scales linear, not awkward, start from (0,0)	B1
	points plotted accurately	B1
	smooth best fit curve drawn	B1
2(c)	31.06 / 31.1	B1
	31 cao	A1
2(d)	curved line of similar shape below original line	B1
2(e)	takes a long time (for last few cm) / would not empty completely / difficult to judge when empty / low pressure	B1

Question	Answer	Marks
3(a)(i)	line through each pair of dots to mirror and line joined between mirrors – correct by eye	B1
3(a)(ii)	described: line through P_1 and P_2 and line through P_3 and P_4	B1
	described: joining the two lines in the middle at the points where the lines meet the mirror	B1
3(a)(iii)	lines through the centre of the blobs / a thin line drawn / use of a sharp pencil / any sensible precaution	B1
3(b)(i), (ii)	normal drawn at Q by eye	B1
3(b)(iii)	$i = 44^\circ \pm 1^\circ$	B1
3(b)(iv)	$r = 47^\circ \pm 1^\circ$	B1
3(c)	P_3 and P_4 further apart / line up the bases of the pins / ensure pins are vertical	B1

Question	Answer	Marks
4(a)	top box – ammeter bottom box – voltmeter	B1
4(b)	meter 1 – current meter 2 – voltage / p.d / emf	B1
4(c)	meter 1 = 0.24 A	B1
	meter 2 = 7.2 V	B1
4(d)	R = 30 ohms	B1
4(e)	check zero error / tap to avoid sticking / switch off to prevent overheating / parallax in reading scale / tight connections any other sensible precaution	B1