Cambridge
O Level

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 cm / s or 2 m / s	**B1**

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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**

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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)	$i = 44° \pm 1°$	**B1**
3(b)(iv)	$r = 47° \pm 1°$	**B1**
3(c)	P_3 and P_4 further apart / line up the bases of the pins / ensure pins are vertical	**B1**

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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**

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