Cambridge
O Level

Cambridge International Examinations
Cambridge Ordinary Level

PHYSICS **5054/42**

Paper 4 Alternative to Practical **May/June 2016**

MARK SCHEME

Maximum Mark: 30

Published

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1	(a)	(i)	(clamp) may topple / fall / tilt / bend / turn / become less stable / become unbalanced / move <u>clockwise</u> (to the right)	B1
		(ii)	sketch showing rod turned around the other way	B1
	(b)	(i)	<u>rule</u> <u>vertical</u> (by eye) with **two** set squares correctly used	B1
		(ii)	height (above bench) at two places same	B1
	(c)	(i)	use of <u>vertical</u> ruler / set square / plumb line	B1
		(ii)	53 cao	B1
	(d)	(i)	axes labelled quantity on both axes and unit on y-axis only and axes correct way round	B1
			scales linear, not awkward, start from (0,0)	B1
			points plotted accurately	B1
			smooth best fit curve drawn	B1
		(ii)	$l \times N_{av}$ seen for one pair of values from graph **or table**	B1
			two correct values of *xy* calculated and not equal comment	B1
		(iii)	less card used can use just one piece of card o.r.a	B1
2	(a)	(i)	P marked at centre of AB	B1
		(ii)	correct normal at P	B1
		(iii)	ray accurately drawn at 40° to normal	B1
	(b)		use of ray box / pins / crosses / pencil dots to <u>mark</u> incident ray	B1
			mark emergent ray with pins / crosses / pencil dots	B1
			emergent ray drawn through crosses / dots **to prism**	B1
			ray drawn through prism to join incident and emergent rays	B1

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3	**(a)**	**(i)**	540 N c.a.o unit required	B1
		(ii)	moving changes the reading so reading is steady / does not change / needle is stable	B1
		(iii)	avoids parallax error (or described)	B1
	(b)	**(i)**	to get largest reading reading just before it changes / starts to move little time to take reading	B1
		(ii)	to reach the box (so he can push it)	B1
4	**(a)**		apparatus just fits across diameter, **and**	B1
	(b)		wind thread around cylinder	B1
			wind n times where $3 \leq n \leq 10$	B1
			measure length / of string	B1
			diameter = $l / n\pi$	B1

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