Cambridge
O Level

Cambridge International Examinations
Cambridge Ordinary Level

PHYSICS **5054/42**

Paper 4 Alternative to Practical **October/November 2016**

MARK SCHEME

Maximum Mark: 30

Published

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1	**(a)**	**(i)**	64(cm^3)	B1
		(ii)	reading top of meniscus instead of bottom / parallax error explained	B1
	(b)	**(i)**	balance / scales	B1
		(ii)	find mass using tare / subtract mass of measuring cylinder from that of measuring cylinder + liquid	B1
			(density) = mass/volume	B1
	(c)		smaller value for density	B1

[Total: 6]

2	**(a)**	**(i)**	crocodile clips	B1
		(ii)	(close jaws) <u>gently</u> **or** <u>use</u> ratchet / thimble / spindle **or** until wheel slips	B1
			repeat at <u>different places / positions</u> (and average)	B1
		(iii)	0.055796(using π button) / 0.055768(using 3.14) / 0.055818 (using 22 / 7)	C1
			0.056	A1
	(b)	**(i)**	axes labelled quantity and unit **and** axes correct way round	B1
			scales linear, not awkward, start from (0,0)	B1
			points plotted accurately	B1
			best-fit <u>straight line</u> drawn	B1
		(ii)	large triangle or any other indication of chosen points <u>shown on graph</u>	B1
			93 ± 2 accept numbers rounding down to 95 and up to 91 not accept fractional values	B1
		(iii)	candidate's **(a)(iii)** ÷ 200×**(b)(ii)**	C1
			answer correct (must be checked) <u>in standard form</u>	A1

[Total: 13]

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3 **(a)** orange, orange B1
brown B1

(b) power supply, fixed resistor and diode (any orientation) in series B1

ammeter in series (with diode and resistor) B1

voltmeter across diode B1

(c) variable power supply
add rheostat / variable resistor
add resistor (in series) / use different values of resistor
add cells / batteries B1

(d) reverse power supply
reverse diode / it B1

[Total: 7]

4 **(a)** 27 B1

(b) **(i)** range 100–140 C1
range 110–130 A1

(ii) 4 × their **(b)(i)** B1

[Total: 4]

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