

CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge Ordinary Level

MARK SCHEME for the October/November 2015 series

5054 PHYSICS

5054/42

Paper 4 (Alternative to Practical), maximum raw mark 30

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1	(a)	use of distant object <u>and screen</u>	B1
	(b)	(i) u marked correctly D marked correctly	B1 B1
		(ii) 96.3 cm unit required	B1
	(iii)	avoid parallax in <u>reading</u> (ruler)/view perpendicularly lens / screen close to ruler use darkened room check for zero error clamp ruler move screen (not lens) backwards and forwards (until sharp image found) object and lens same height (above bench) object and lens and screen perpendicular to bench / vertical	B1
	(c)	(ii) axes correct way round, labelled quantity and unit scales linear, sensible points plotted accurately within $\frac{1}{2}$ small square neat crosses or small points (in circle) best fit smooth curve drawn	B1 B1 B1 B1
		(iii) 1. 39 to 41 (cm)	B1
		2. 20 ± 2 (cm)	B1
	(iv)	both values for f <u>correctly</u> calculated and sensible comment	B1
			[Total: 12]
2	(a)	pulling string tight and squashing ball ball not spherical sensible comment about marking string holding string straight/taut to measure length	B1
	(b)	(i) method mark: ball placed between two planes	M1
		practical detail mark: use a ruler / tape to measure	A1
	(ii)	any two from: repeat and average how planes made parallel described not squash ball avoid parallax in reading metre rule	B2
			[Total: 5]

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- 3 (a) metre rules laid end to end (from one wall to other)
can accept from a diagram B1
- (b) one end fixed against wall (however expressed) **and** measure to the opposite wall/the other side B1
- (c) (i) speed (of light) B1
length of device
position of laser/detector within the device
- (ii) can see what it is reflecting off/you can see it/I.R. cannot be seen/is not coloured
to make sure it is horizontal/level B1
- (iii) places it **touching wall** and pointing at opposite wall B1
- (iv) expensive B1
uses batteries/batteries run down/need recharging
needs clear line of sight/other objects might get in the way
laser hazard with eyes
some surfaces may not reflect the light
- [Total: 6]**
- 4 (a) circuit containing **one** cell and resistor, with ammeter in series B1
voltmeter in parallel with resistor/cell B1
- (b) (i) it matters which way round it is **connected**
so you can **connect** it the right way round B1
- (ii) ammeter terminal connected to –ve of cell labelled B B1
- (c) (i) 3(V), 4.5(V) and 6(V) B1
- (ii) four cells drawn in series B1
- (d) no change/same value **and** B1
resistance independent of voltage/depends only on the resistor
OR
resistance increases **and**
resistor becomes hot
- [Total: 7]**