www.dynamicpapers.com

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

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the October/November 2015 series for most Cambridge IGCSE®, Cambridge International A and AS Level components and some Cambridge O Level components.

® IGCSE is the registered trademark of Cambridge International Examinations.

CAMBRIDGE
International Examinations

www.dynamicpapers.com

1 **(a)** use of distant object and screen B1

(b) **(i)** *u* marked correctly B1
D marked correctly B1

(ii) 96.3 cm unit required B1

(iii) avoid parallax in reading (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 B1
scales linear, sensible B1
points plotted accurately within ½ small square
neat crosses or small points (in circle) B1
best fit smooth curve drawn B1

(iii) **1.** 39 to 41 (cm) B1

2. 20 ± 2 (cm) B1

(iv) both values for f correctly 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]

© Cambridge International Examinations 2015

www.dynamicpapers.com

3 **(a)** metre rules laid <u>end to end</u> (from one wall to other) B1
can accept from a diagram

(b) one end <u>fixed</u> 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 <u>pointing at</u> opposite wall B1

(iv) expensive
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 B1

[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]

© Cambridge International Examinations 2015