CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge Ordinary Level

MARK SCHEME for the May/June 2015 series

5054 PHYSICS

5054/41 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.

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CAMBRIDGE
International Examinations

1 (a) (i) use of set-square described [B1]
use of plumb line
line up with vertical object in room
use of spirit level with explanation

(ii) bottom of ball AND some explanation [B1]
e.g. bottom of ball hits bench
H measured to bottom of ball
so that the whole ball falls through H

(iii) line from bench to level with bottom of ball ecf (a) (ii) [B1]

(iv) eye drawn level with bottom of ball ecf (a) (ii),(iii) [B1]

(v) **any two** correct answers, e.g. [B2]
ball moving
ball not close to ruler
difficult to drop and observe
bounce height varies
difficult to position eye at correct position

(b) (i) 66.7, 60.3, 54.0, 40.3, 26.7, 13.3 cao [B1]

(ii) axes: correct way round, labelled quantity and unit [B1]
scales: more than ½ grid, linear, not awkward [B1]
points plotted accurately within ½ small square [B1]
best fit straight line drawn [B1]

(iii) one value calculated [B1]
two values calculated AND some comment
eg values close so relationship holds [B1]

[Total marks: 13]

2 (a) (i) distance between divisions changes (with depth) [B1]

(ii) measures small amounts (more accurately) [B1]
larger range of readings

(b) (i) water level drawn at 7.5 mm [B1]

(ii) sensible comment, e.g. [B1]
difficult to hold correctly
gauge may be tipped
rain sticks to walls of container

(c) (i) so you can see the water [B1]

(ii) hold it upright in the ground [B1]
more stable
stays in position

[Total marks: 6]

3 a correct experiment described [M0]
i.e. must be refraction

ray box OR pins AND [B1]
protractor AND ruler AND
any one from
(plain) paper / board / (sharp) pencil

mark ray in air on both sides of block with pins or crosses [B1]

written description of: [B1]
join points in air to block (both sides) and
(remove block to) draw ray in block

correct angles measured and labelled on diagram [B1]
or described if no diagram drawn

accuracy mark: e.g. [B1]
repeats described anywhere
fine pencil
pins far apart
bottom of pins
large angles
vary angle of incidence

[Total marks: 5]

4 **(a)** **(i)** correct circuit symbols for single cell, ammeter, variable resistor [B1]
all three in series [B1]

(ii) ammeter [B1]
variable resistor/rheostat/potentiometer
stopwatch/stop-clock/clock
ALL THREE correct

(iii) off scale of 0.1 A meter **and** [B1]
10 A scale deflection too small

(iv) reduce resistance (of variable resistor) (as current decreases) [B1]

(b) cell/rheostat/wire becomes hot [B1]

[Total marks: 6]