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.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the May/June 2015 series for most Cambridge IGCSE®, Cambridge International A and AS Level components and some Cambridge O Level components.
1 (a) (i) use of set-square described
   use of plumb line
   line up with vertical object in room
   use of spirit level with explanation

(ii) bottom of ball AND some explanation
     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.
     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
     scales: more than ½ grid, linear, not awkward
     points plotted accurately within ½ small square
     best fit straight line drawn

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

[Total marks: 13]

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

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

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

(ii) sensible comment, e.g.
     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
     more stable
     stays in position

[Total marks: 6]
3 a correct experiment described
i.e. must be refraction

ray box OR pins AND
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

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

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

accuracy mark: e.g.
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
all three in series

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

(iii) off scale of 0.1 A meter and
10 A scale deflection too small

(iv) reduce resistance (of variable resistor) (as current decreases)

(b) cell/rheostat/wire becomes hot

[Total marks: 6]