CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Ordinary Level

MARK SCHEME for the May/June 2014 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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1 **(a)** emf / potential difference / voltage [B1]

(b) 3.6 V cao [B1]

(c) **any one from**
no parallax error
needle does not stick
easier to read / measure (current)
easier to change range
lower resistance [B1]

(d) **(i)** **1.** 0 [B1]

2. 4 V [B1]

3. 2 V [B1]

(d) **(ii)** depends only on the cells / pd or voltage supplied **or** R increased and current decreased (so IR stays same) [B1]

[7]

2 (a) (i) eye marked level with meniscus [B1]

(ii) **any one from**
so meniscus is above side of beaker / not below rim of beaker
so not looking through side of beaker
condensation on side of beaker obscures view [B1]

(iii) **any one from**
room cooler than water
may cool due to evaporation (on bulb)
temp shown falls (to room temp)
will measure room / air temp [B1]

(iv) 43 °C [B1]

(b) (i) volume (of water added) / cm^3 [B1]
temperature (of water) / °C [B1]

(ii) axes labelled quantity and unit [B1]
scales linear and correct way round – *y*: 2 cm ≡ 10 °C
– *x*: 2 cm ≡ 50 cm^3 [B1]
points plotted accurately [B1]
smooth curve of best fit [B1]

(iii) 57 °C ± 1 °C [B1]

(iv) large amount of water added
reference to 450 cm^3 [B1]

(v) **any one from**
temp drop becomes small (for each 60 cm^3)
water would fill beaker / overflow
run out of water in beaker A
experiment takes too long [B1]

[13]

3 **(a)** **(i)** 0.5 to 1(.0) cm^3 [B1]

(ii) B [M0]
most sensitive / volume marble small / has 0.2 cm^3 divisions / volume less than 10 cm^3 [A1]

would not fit into A [A1]

(iii) two readings and subtract [B1]

(b) **(i)** less fragile / will not break / cheaper [B1]

(i) flat meniscus [B1]

[6]

4 use of object and screen **or** use of ray box and paper (with cylindrical lens) [B1]

how image focused on screen described
e.g. distance from lens to screen varied
e.g. two rays crossing on paper [B1]

lens reversed [B1]

correct reference to prediction
e.g. no longer in focus [B1]

[4]