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

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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]

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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]

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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]

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