UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the October/November 2011 question paper

for the guidance of teachers

0625 PHYSICS

0625/61   Paper 6 (Alternative to Practical), maximum raw mark 40

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.

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1 (a) graph:
    axes: the right way round, labelled x and y with unit cm   [1]
    scale: both 10 small squares = 2 cm
          (either or both 20 small squares = 5 cm also acceptable)   [1]
    plots: all correct to ½ small square   [1]
    line: well-judged, best-fit, straight, thin, continuous line   [1]

   (b) correct triangle method using at least ½ candidate's line, with method clearly indicated
      on graph   [1]
      G = 0.94 – 1.00, no ecf   [1]

   (c) 1.0/(candidate's G) calculation correct, 2 or 3 significant figures and unit N   [1]

   (d) (i) (where rule) balances on pivot o.w.t.t.e.   [1]

      (ii) take readings from 49.7 OR
         adjust rule by adding weight until it balances at 50.0 cm mark   [1]

                                            [Total: 9]

2 (a) θ_c = 24   [1]
      ^{o}C   [1]

   (b) θ_{av} = 55 (^{o}C) ecf from **(a)**   [1]

   (c) any two from:
      stirring
      waiting for temperature (to stabilise)
      view thermometer at right angles o.w.t.t.e.   [2]

   (d) heat loss (to surroundings) o.w.t.t.e.   [1]

   (e) one from:
      lagging beakers o.w.t.t.e.
      use of lid
      swifter transfer of water   [1]

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(f) one from:
    amount of stirring   o.w.t.t.e.
    hot water temperature
    cold water temperature
    room temperature   o.w.t.t.e.
    transfer time   [1]

[Total: 8]

3 **(a)** **(i)** 0.27 (A)   [1]

       (ii) expect YES (ecf: no)   [1]
            expect close enough / within limits of experimental accuracy   o.w.t.t.e.
            ecf: beyond limits of experimental accuracy   o.w.t.t.e.   [1]

  (b) vary/control current/voltage   [1]

  (c) **(i)** voltmeter symbol correct and correctly connected across all three resistors   [1]

       (ii) 2.2 (V)   [1]

       (iii) R correctly evaluated
            ecf from **(ii)**   [1]
            2 or 3 significant figures and unit Ω [1]

[Total: 8]

4 **(a)** **(i)** normal at 90°, at centre of **MR** and crossing **MR**   [1]

       (ii) **AB** is a continuous line from **B**, 8 cm long   [1]
            AB is at 40° to normal   [1]

  (b) **(i)** continuous, thin line that reaches normal and at least touches P_2 and P_3 dots   [1]

       (ii) r = 40 – 43($^{\circ}$) (no ecf)   [1]

  (c) any two from:
      thickness of lines
      thickness of protractor o.w.t.t.e. / accuracy of reading protractor
      thickness of pins / pin holes   [2]
      accept thickness of mirror / glass in front of mirror

  (d) ticks in boxes 1, 3, 5 (1 mark each)
      (if more than 3 ticks, –1 for each tick in a wrong box to minimum of 0)   [3]

[Total: 10]

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5 (a) 200 m or more with unit [1]

(b) tape measure, trundle wheel or gps device [1]

(c) correct working seen [1]
345.67 (accept 345.66, 345, 346, 350) [1]

(d) (No), <u>readings</u> (time or distance) too inaccurate [1]

[Total: 5]