CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the October/November 2013 series

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.

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 October/November 2013 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

1 (a) rule balanced <u>and</u> pivot at centre of mass

(b) EITHER take readings from 50.2 cm mark
OR add mass/weight/load
OR place pivot at 50.2 cm mark   [1]

(c) (i) cm, cm   [1]

(ii) clockwise 77.5 (or 78) (N cm)
anticlockwise 78 (N cm)   [1]

(d) EITHER repeats
OR estimate between two best positions that almost balance but tip opposite sides o.w.t.t.e
OR suitable method to locate centre of mass **Q**   [1]

[Total: 5]

2 (a) 87 (^{o}C)   [1]

(b) (i) s, ^{o}C, ^{o}C   [1]

(ii)(iii) **B** <u>and</u> greater temperature difference
OR numbers quoted, *must see* 21 and 8 or 24 and 5   [1]

(iv) **A** 23(^{o}C) and **B** 40(^{o}C)   [1]

(v) 20 – 26 (^{o}C)   [1]

(c) EITHER viewing thermometer at right angles
OR reference to being ready on time   [1]

(d) any two from:
room temperature
water / starting temperature
distance of thermometer bulb from water surface
relevant reference to draughts / fans / air conditioning   [2]

[Total: 8]

3 **(a)** **(i)** 1.8 (V)
0.3 (A)

    (ii) P_1 = 0.54 (W) e.c.f. allowed

    (iii)(iv)(v) P_T = 1.59 (or 1.6) W   [1]

  (b) statement matches results (expect YES) e.c.f. allowed   [1]
justification in terms of within or beyond limits of experimental accuracy o.w.t.t.e.   [1]

  (c) **(i)** diagram:
    lamps in parallel, variable resistor in series with power supply, with correct symbols
    for variable resistor, lamps and voltmeter   [1]
    <u>one</u> voltmeter correctly positioned   [1]

    (ii) vary current (or p.d.)   [1]

                                  [Total: 9]

4 **(a)** **(i)(ii)** u = 26 (mm) or 2.6 (cm)   [1]
        v = 44 (mm) or 4.4 (cm)   [1]

  (b) **(i)(ii)** 1144 <u>mm^2</u> and 70 <u>mm</u>
    OR 11.44 <u>cm^2</u> and 7.0 (or 7) <u>cm</u>   [1]
    e.c.f. from **(a)**

    (iii) x = 16 or 16.3 or 16.34 (1.6 or 1.63 or 1.634)
    e.c.f. from **(b)(i)** and **(ii)**   [1]

  (c) f = 16 or 16.3 or 16.34 <u>cm</u> (160 or 163 or 163.4 <u>mm</u>)   [1]
    f given to 2 or 3 significant figures   [1]

  (d) up to 0.5 cm either side of 18.2 cm   [1]

  (e) any two from:
    use of darkened room / brighter lamp / no other light interfering
    mark position of centre of lens on holder
    place metre rule on bench (or clamp in position)
    ensure object and lens are same height from the bench
    lens / object / screen perpendicular to bench
    repeats
    avoidance of parallax with action and reason   [2]

                                    [Total: 9]

5 **(a)** 54 – 55

    (b) **(i)** table:
           e values 12, 22, 36, 50, 60 (e.c.f. from **(a)**)   [1]

        (ii) graph:
           axes correctly labelled e/mm and F/N and correct way round   [1]
           suitable scales   [1]
           all plots correct to ½ small square   [1]
           good line judgement   [1]
           thin, single continuous line   [1]

       (iii) triangle method using at least half of candidate's line, shown on the graph   [1]
           G = 11 – 13, no e.c.f.   [1]

                                                      [Total: 9]