# MARK SCHEME for the May/June 2014 series

# 0625 PHYSICS

**0625/62**    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 May/June 2014 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

**1** **(a)** **(i)** $l$ in range 17.1–17.2 (cm)     [1]

       **(ii)** $x$ in range 15.5–15.6 (cm) **and** correct calculation of $y$ (e.c.f. incorrect $l$)     [1]

   **(b)** use of at least 3 turns     [1]

       (mark string and) measure distance (between marks) **and** divide by number of turns     [1]

   **(c)** **(i)** any one from:
- stretching of string
- thickness of string
- thickness of mark
- gaps between turns
- winding of turns at an angle     [1]

       **(ii)** $V$ = 7.1(0)–7.2(0) <u>cm$^3$</u> e.c.f. **(a)(ii)**     [1]

       **(iii)** $V_E$ = 0.2–0.6 (cm$^3$)     [1]
(expect estimate to nearest 0.1 cm$^3$)

           sensible reasoning / working / method which takes account of sharpened shape and length     [1]

                                                             **[Total: 8]**

**2** **(a)** **(i)** 88 (°C)     [1]

       **(ii)** s, °C     [1]

   **(b)** axes correctly labelled with quantity and unit     [1]

       suitable scales on both axes, occupying more than half the grid     [1]

       all plots correct to ½ small square     [1]

       good line judgement, not through all points     [1]

       thin, continuous line and neat plots (penalise large 'blobs')     [1]

   **(c)** **(i)** statement to match candidate's graph line (expect curve)     [1]

       **(ii)** statement to match candidate's graph line (expect (rate) decreases)     [1]

   **(d)** description or diagram to show one from:
- perpendicular line of sight
- reading to bottom of meniscus     [1]

                                                             **[Total: 10]**

**3 (a) (i)** 2.1 (V) [1]

0.45 (A) [1]

**(ii)** $R$ = 4.7 accept 4.67 ($\Omega$) e.c.f. **(a)(i)** [1]

all units correct, V, A, $\Omega$, symbols or words [1]

**(b)** (current) decreases [1]

**(c)** correct symbol for variable resistor (rectangle with strike-through arrow) [1]

**(d)** clear description or diagram showing triangle method with large triangle **or** taking **two** co-ordinates far apart on line [1]

how to calculate gradient, e.g. equation or rise / run, etc. [1]

[Total: 8]

**4 (a) (i)** $x$ and $y$ clearly and correctly labelled to centre of lens [1]

**(ii)** $d$ = 40.9 (cm)    no mark

**(iii)** $d^2$ = 1673 (cm$^2$)    no mark

**(iv)** $f$ = 14.8 / 14.77 correct answer only [1]
ignore sig. figs, but penalise incorrect rounding

cm **and** 2 or 3 sig. figs. [1]

**(b)** any two from:
- use of darkened room / brighter lamp / no other lights
- mark position of centre of lens on holder
- place metre rule on bench / clamp in position
- ensure object and (centre of) lens are same height (from the bench)
- repeat (and average)
- move the lens slowly / to and fro
- lens, object and screen all vertical / perpendicular to bench    [max 2]

**(c) (i) two points in either order:**
one magnified, other diminished owtte [1]

one brighter than the other [1]

**(ii)** both inverted / both real [1]
accept same way up / same shape

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**(d)** distance between object and screen / *D* / change position of screen [1]

**[Total: 9]**

**5** **(a)** **(i)** 1 m–2.5 m [1]

**(ii)** 10 cm–1 m but *h* must be less than *l*/2 [1]

**(b)** any three from:
- making marks / lines on track for start and finish
- repeats / find average time
- constant starting positions
- not pushing car
- time from same point on car
- use light gates / data logger / automatic timer for timing
- method for avoiding parallax error <u>when judging finishing point</u> / stand level with finish [max 3]

**[Total: 5]**