

**MARK SCHEME for the May/June 2012 question paper  
for the guidance of teachers**

**0625 PHYSICS**

**0625/51**

Paper 5 (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 must be read in conjunction with the question papers and the report on the examination.

- Cambridge will not enter into discussions or correspondence in connection with these mark schemes.

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- 1 (a)  $V_1$  about 80,  $V_2 > V_1$  [1]  
 $V_G$  correct [1]  
 $\text{cm}^3$  (allow ml) at least once, not contradicted [1]
- (b)  $V_3$  about 70,  $V_4 > V_3$  [1]  
Difference correct [1]  
 $V_A$  correct [1]
- (c)  $V_W$  present and within  $\pm 5 \text{ cm}^3$  of  $V_A$  [1]
- (d) Three from:  
 $V_A$ : Finger increases  $V_4$  / tube not pushed in far enough  
Some water in test-tube  
 $V_W$ : Water remaining in tube / measuring cylinder  
Either (accept only once):  
Measuring cylinder readings not very sensitive  
Subtraction produces large percentage uncertainty [3]
- [Total: 10]**
- 2 (a) Sensible value for  $\theta_R$  (15(°C) to 50(°C)) [1]
- (b) Table:  
mm, °C [1]  
Correct  $d$  values 100, 80, 60, 40, 20, 10 [1]  
Temperatures increasing (accept first two readings identical) [1]  
Evidence of temperatures to at least 1°C [1]
- (c)  $\theta_V$  present and greater or equal to  $\theta_H$  [1]  
Correct difference AND higher, lower or same to match difference (expect higher) [1]
- (d) Draughts [1]  
Room temperature / humidity [1]
- (e) One from: Avoidance of parallax explained  
Waiting time between readings [1]
- [Total: 10]**

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- 3 (a) (cm, V, A) (no mark awarded) [1]  
V to at least 1 d.p. and < 3 V [1]  
I to at least 2 d.p. and < 1 A
- (b) Graph: [1]  
Axes correctly labelled and correct way around [1]  
Suitable scales – plots occupy at least half the grid [1]  
All plots correct to ½ small square [1]  
Good line judgement AND thin, continuous line AND plots suitably shown (penalise large 'blobs') [1]
- (c) Triangle method using line drawn and shown (no line 1 max) [1]  
Using at least half of line [1]
- (d) 2 or 3 significant figures, value matching G [1]  
With unit  $\Omega$  / ohm(s) [1]
- [Total: 10]**
- 4 (c) x recorded and < 40 cm [1]
- (e) y recorded > 40 cm [1]  
x and y in m, cm or mm [1]
- (f) f correct [1]
- (g) x + y = 75–85 cm [1]  
two f values the same to within  $\pm 1$  cm [1]  
both f values to 2 or 3 significant figures, consistent [1]
- (h) Correct statement for results (expect Yes) [1]  
Idea of within (or beyond) experimental accuracy [1]
- (i) One from: [1]  
Use of darkened room  
How to avoid parallax when taking readings  
Movement of lens back and forth to obtain clearest image  
Mark lens holder to show position of centre of lens  
Metre rule clamped or on bench  
Object, lens and screen all perpendicular to bench  
Object and lens same height above bench
- [Total: 10]**