## UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS GCE Ordinary Level

# MARK SCHEME for the October/November 2010 question paper for the guidance of teachers

### **5054 PHYSICS**

5054/32

Paper 3 (Practical Test), maximum raw mark 30

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.

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Page 2		ge 2	Mark Scheme: Teachers' version	Syllabus	Paper	•
			GCE O LEVEL – October/November 2010	5054	32	
			Section A			
	(a)	(i) $\theta_1$ in	range 15 °C to 35 °C, recorded with unit seen here or in	n (ii).	B1	
		(ii) θ <sub>1</sub> +	20 °C ≥ $\theta_2$ ≥ $\theta_1$ + 5 °C, recorded with unit seen here or i	n <b>(i)</b> .	B1	[2]
	(b)		rect calculation of heat gained by the water ore unit) (numerically 210 × temperature difference).		M1	
		`´ (nun	rect calculation of the fall in temperature with unit nerically $50 \times \text{initial temperature difference}$ ). ore $\theta_{\text{B}}$ ).		A1	
		, -	oly unit penalty once only in <b>(a)</b> and <b>(b)</b> ).			[2]
(	(c)		wing thermal energy changes are not taken into accour sferred to the beaker /	nt:		
		heat tran	isferred to the beaker / isferred to the tongs when the mass is out of the flame / during transfer /	1		
		heat tran	to the surroundings. allow 'heat lost' on its own).		B1	[1]
					[Tota	ıl: 5]
	(a)	Normal a	and O correct by eye.		B1	[1]
	(b)		s on one side of normal $\geq 5.0\text{cm}$ apart, s of pins clear from the holes in the paper and in sensible	e direction.	B1	
		Two pins	s on opposite side of normal in sensible direction and co	rrectly labelled.	B1	
			vo pins $\geq 5.0\text{cm}$ apart, of pins clear from the holes in the paper and in sensible	direction.	B1	
			$y \le 11.0$ cm with I shown correctly and from correct diast mm or better with unit.	gram,	B1	[4]
					[Tota	ıl: 5]
	(a)		agram showing power supply, resistor and capacitor in neter in parallel.	series, with switch	, capad B1	citor [1]
	(b)	$t_2$ in the r	range 40s to 99s with unit seen here or in <b>(c)</b> .		B1	[1]

(d) Correct calculation of ratio to 2/3 s.f. and no unit with value ≥ 2.0. (Allow min/s for unit if appropriate).

(c)  $t_1$  in the range 10 s to 30 s with unit seen here or in (b).

A minimum of 2 readings seen in (b) and (c).

B1 [1]

[Total: 5]

[2]

В1

В1

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#### **Section B**

#### 4 Preliminary Results

(a) Must be a diagram to show set square between floor and rule or a diagram to show rule aligned with vertical object e.g. door frame or window frame.

B1 [1]

**(b)** *y* recorded to the nearest mm or better with unit. Scale readings shown here or in **(c)** 

B1 [2]

(c)  $M = 200 \,\mathrm{g}$  with unit. y value in range  $1.50 \times$  to  $2.50 \times$  the previous value, recorded to the nearest mm or better with unit.

B1

[2]

[4]

**B1** 

(Apply unit penalty for y once only)

#### **Table**

(d) Table with units for *M* and *y*. (Ignore missing units on scale readings).

В1

In awarding the next marks good results should be judged by checking  $y \pm 0.5$  cm from the examiner's best straight line or curve.

3 good values for *y*. 4<sup>th</sup> good value for *y*. 5<sup>th</sup> good value for *y*.

B1 B1 B1

#### Graph

(e) Axes labelled with units and correct orientation. (Allow e.c.f. from wrong unit in table but not no units)

B1

Suitable scale, not based on 3, 6, 7 etc. with plotted data occupying ≥ half the page in both directions. (Allow the graph to start at the origin.)

В1

Two points plotted correctly – check the two points furthest from the line. This mark can only be scored if the scale is easy to follow.

B1

(Points must be within ½ small square of the correct position)

B1 [4]

Best fit fine line and fine points or crosses. (Line thickness to be no greater than the thickest lines on the grid)

#### **Calculations**

(f) Straight line drawn on graph or tangent drawn to curve.
 Use of large triangle with base ≥ 8 cm.
 (Base should be ≥ 12 cm if grid is used landscape rather than portrait.)
 Correct calculation 2/3 s.f. (ignore unit).

M0 A1

Α1

[Total: 15]

[2]