## 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 GCE O LEVEL – October/November 2010	Syllabus 5054	Paper 32	
			Section A		52	
1	(a)	(i) $\theta_1$ in range 15 °C to 35 °C, recorded with unit seen here or in (ii).			B1	
		(ii) θ <sub>1</sub> +	20 °C $\geq \theta_2 \geq \theta_1$ + 5 °C, recorded with unit seen here or	in <b>(i).</b>	B1	[2]
	(b)	• •	rect calculation of heat gained by the water pre unit) (numerically $210 \times temperature difference)$ .		M1	
		(nun	rect calculation of the fall in temperature with unit nerically 50 × initial temperature difference). ore $\theta_{\rm B}$ ).		A1	
		(App	bly unit penalty once only in <b>(a)</b> and <b>(b)</b> ).			[2]
	(c)	The follo heat tran heat tran				
		heat tran heat lost	during transfer / Isferred to the air when the mass is out of the flame / to the surroundings. allow 'heat lost' on its own).		B1	[1]
2	(a)	Normal a	and O correct by eye.		B1	[1]
	(b)		s on one side of normal $\geq$ 5.0 cm apart, s of pins clear from the holes in the paper and in sensit	le direction.	B1	
		Two pins	s on opposite side of normal in sensible direction and c	orrectly labelled.	B1	
			vo pins ≥ 5.0 cm apart, of pins clear from the holes in the paper and in sensible $1$	e direction.	B1	
			$0 \text{ cm} \le y \le 11.0 \text{ cm}$ with I shown correctly and from correct diagram, nearest mm or better with unit.		B1	[4]
				[Tota	l: 5]	
3	(a)	Circuit diagram showing power supply, resistor and capacitor in series, with swi and voltmeter in parallel.		ch, capao B1	citor [1]	
	(b)	$t_2$ in the r	range 40 s to 99 s with unit seen here or in <b>(c)</b> .		B1	[1]
	(c)		range 10s to 30s with unit seen here or in <b>(b)</b> . um of 2 readings seen in <b>(b) and (c)</b> .		B1 B1	[2]
	(d)		calculation of ratio to $2/3$ s.f. and no unit with value ≥ 2. in/s for unit if appropriate).	0.	B1	[1]
						l: 5]

Page 3		Mark Scheme: Teachers' version	Syllabus	Paper			
		GCE O LEVEL – October/November 2010	5054	32			
		Section B					
Pr	eliminary	Results					
(a)	or a diag	a diagram to show set square between floor and rule gram to show rule aligned with vertical object frame or window frame.		B1	[1]		
(b)		ed to the nearest mm or better with unit. adings shown here or in <b>(c)</b>		B1 B1	[2]		
(c)	recorded	n range 1.50× to 2.50× the previous value, to the nearest mm or better with unit.		B1 B1	[2]		
	(Apply u	nit penalty for <i>y</i> once only)					
Та	ıble						
(d)		th units for <i>M</i> and <i>y.</i> nissing units on scale readings).		B1			
		ing the next marks good results should be judged ing $y \pm 0.5$ cm from the examiner's best straight line or	curve.				
	4 <sup>th</sup> good	alues for <i>y.</i> value for <i>y.</i> value for <i>y.</i>		B1 B1 B1	[4]		
Gr	aph						
(e)		elled with units and correct orientation. c.f. from wrong unit in table but not no units)		B1			
	with plott	scale, not based on 3, 6, 7 etc. ted data occupying ≥ half the page in both directions. e graph to start at the origin.)		B1			
	This mar	nts plotted correctly – check the two points furthest from k can only be scored if the scale is easy to follow. nust be within ½ small square of the correct position)	n the line.	B1			
		ne line and fine points or crosses. ckness to be no greater than the thickest lines on the g	rid)	B1	[4]		
Ca	Calculations						
(f)	Straight line drawn on graph or tangent drawn to curve. Use of large triangle with base $\ge 8$ cm. (Base should be $\ge 12$ cm if grid is used landscape rather than portrait.)		ortrait )	M0 A1			
	•	calculation 2/3 s.f. (ignore unit).	ortrait.)	A1	[2]		
				[Total	: 15]		