## **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.



	Page 2		Mark Scheme	Syllabus	Paper	
			IGCSE – October/November 2013	0625	61	
1	(a) rul	e bala	nced <u>and</u> pivot at centre of mass		[1]	
	OF	R add	take readings from 50.2 cm mark mass/weight/load			
	OF	₹ place	e pivot at 50.2 cm mark		[1]	
	(c) (i)				[1]	
	(ii)		kwise 77.5 (or 78) (Ncm) clockwise 78 (Ncm)		[1]	
	OF	R estin	repeats nate between two best positions that almost balance ble method to locate centre of mass <b>Q</b>	e but tip opposite	sides o.w.t.t.e [1]	
	Oi	v Suita	ble method to locate centre of mass &		[Total: 5]	
2	(a) 87	(°C)			[1]	
	(b) (i)	s, °C	c, °C		[1]	
	(ii)		<b>B</b> <u>and</u> greater temperature difference OR numbers quoted, <i>must see</i> 21 and 8 or 24 and	5	[1]	
	(iv)	<b>A</b> 23	8(°C) and <b>B</b> 40(°C)		[1]	
	(v)	20 –	26 (°C)		[1]	
			viewing thermometer at right angles ence to being ready on time		[1]	
	O.	(10101	ones to being ready on time		[1]	
	(d) an	-	from: nperature			
	wa	iter / s	tarting temperature of thermometer bulb from water surface			
			reference to draughts / fans / air conditioning		[2]	
					[Total: 8]	
					,	

Page 3						Mark	Schei	me			S	yllabus		Paper	
	-			IGC	SE - (				er 2013	3				61	
(a)															[1] [1]
	(ii) <i>I</i>	P <sub>1</sub> =	0.54	(W) e.d	c.f. all	owed									[1]
	(iii)(i	v)(v	<b>⁄)</b> P₁	= 1.59	(or 1.	.6) W									[1]
(b)											ntal acc	uracy o.	w.t.t.e.		[1] [1]
(c)	l. f	amp or v	ps in <sub>l</sub> ⁄ariab	le resis	tor, la	mps a	and vol			power	- supply	, with co	rrect sy	mbols	[1] [1]
	(ii) \	/ary	curre	ent (or p	o.d.)										[1]
														[Tota	l: 9]
(a)	(i)(ii)														[1] [1]
(b)	(i)(ii)	OR	R 11.4	4 <u>cm</u> 2 a			7) <u>cm</u>								[1]
(	` '					•	or 1.63	3 or 1.	.634)						[1]
(c)						•		or 16	3.4 <u>mm</u>	)					[1] [1]
(d)	up to	0.5	cm e	ither si	de of	18.2 c	m								[1]
(e)	use of mark place ensu lens	of da pos e me re o / obj	arken sition etre ru object	of cent lle on b and ler	re of I ench is are	ens of or class	n holde amp in e heigh	er posit it from	ion) n the be		ering				
			ce of p	oarallax	with	actior	and r	easor	1						[2]
														[Tota	l: 9]
	(a) (b) (c) (d)	(a) (i) (iii) (iii) (b) state justiff (c) (i) (i) (iii) (iii) (iii) (iii) (iii) (c) (f) (d) up to (e) any to use (f) and the place ensure lensure repeated to the content of the content o	(a) (i) 1.8 0.3 (ii) P <sub>1</sub> = (iii)(iv)(v) (b) statement justificat (c) (i) diagram for vone (ii) vary  (a) (i)(ii) u = v = v = v = v = v = v = v = v = v =	(a) (i) 1.8 (V) 0.3 (A)  (ii) P <sub>1</sub> = 0.54  (iii)(iv)(v) P <sub>T</sub> (b) statement many in proceeding the state of t	(a) (i) 1.8 (V) 0.3 (A)  (ii) P <sub>1</sub> = 0.54 (W) e.c.  (iii)(iv)(v) P <sub>T</sub> = 1.59  (b) statement matches rejustification in terms of lamps in parallel, for variable resistance voltmeter compared (ii) vary current (or produced to the content of the con	(a) (i) 1.8 (V) 0.3 (A)  (ii) $P_1 = 0.54$ (W) e.c.f. all (iii)(iv)(v) $P_T = 1.59$ (or 1.6)  (b) statement matches results justification in terms of with lamps in parallel, variation for variable resistor, lamps in parallel, variation variable resistor, lamps voltmeter correctly (ii) vary current (or p.d.)  (a) (i)(ii) $u = 26$ (mm) or 2.6 (ov = 44 (mm) or 4.4 (ov = 44 (mm)) or 4.4 (ov = 44 (mm)) or 4.5 (ov = 44 (mm)) or 4.6 (ov = 44 (mm)) or 4.7 (ov = 44 (mm)) or 4.8 (ov = 44 (	(a) (i) 1.8 (V) 0.3 (A)  (ii) P <sub>1</sub> = 0.54 (W) e.c.f. allowed (iii)(iv)(v) P <sub>T</sub> = 1.59 (or 1.6) W  (b) statement matches results (experimentation in terms of within or lamps in parallel, variable refor variable resistor, lamps at one voltmeter correctly positive vary current (or p.d.)  (a) (i)(ii) u = 26 (mm) or 2.6 (cm) v = 44 (mm) or 4.4 (cm)  (b) (i)(ii) 1144 mm² and 70 mm OR 11.44 cm² and 7.0 (or e.c.f. from (a)  (iii) x = 16 or 16.3 or 16.34 (1.6 e.c.f. from (b)(i) and (ii)  (c) f = 16 or 16.3 or 16.34 cm (160 or figiven to 2 or 3 significant figures (d) up to 0.5 cm either side of 18.2 cm (d) up to 0.5 cm either side of lens or place metre rule on bench (or claensure object and lens are same lens / object / screen perpendicure repeats	(a) (i) 1.8 (V) 0.3 (A)  (ii) P <sub>1</sub> = 0.54 (W) e.c.f. allowed  (iii)(iv)(v) P <sub>T</sub> = 1.59 (or 1.6) W  (b) statement matches results (expect YES justification in terms of within or beyond for variable resistor, lamps and volone voltmeter correctly positioned  (ii) vary current (or p.d.)  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(c) (i) diagram: lamps in parallel, variable resistor in series with power supply, with correct sy for variable resistor, lamps and voltmeter one voltmeter correctly positioned  (ii) vary current (or p.d.)  (a) (i)(ii) u = 26 (mm) or 2.6 (cm) v = 44 (mm) or 4.4 (cm)  (b) (i)(iii) 1144 mm² and 70 mm OR 11.744 cm² and 7.0 (or 7) cm 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)  (c) f = 16 or 16.3 or 16.34 cm (160 or 163 or 163.4 mm) f given to 2 or 3 significant figures  (d) up to 0.5 cm either side of 18.2 cm  (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 (or clamp in position) ensure object and lens are same height from the bench lens / object / screen perpendicular to bench (or clamp in position) ensure object or clamp in position) ensure object and lens are same height from the bench lens / object / screen perpendicular to bench (or clamp in position) ensure object or clamp in position) ensure object / screen perpendicular to bench (or clamp in position)	(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  (b) statement matches results (expect YES) e.c.f. allowed justification in terms of within or beyond limits of experimental accuracy o.w.t.t.e.  (c) (i) diagram: lamps in parallel, variable resistor in series with power supply, with correct symbols for variable resistor, lamps and voltmeter one voltmeter correctly positioned  (ii) vary current (or p.d.)  [Tota  (a) (i)(ii) $u = 26$ (mm) or 2.6 (cm) $v = 44$ (mm) or 4.4 (cm)  (b) (i)(iii) $1.444 \frac{cm^2}{cm^2}$ and $7.0$ (or $7.0 \frac{cm}{cm^2}$ e.c.f. from (a)  (iii) $v = 1.6$ or $16.3$ or $16.34$ ( $1.6$ or $1.63$ or $1.634$ )  e.c.f. from (b)(i) and (ii)  (c) $v = 1.6$ or $16.3$ or $16.34$ ( $1.6$ or $1.63$ or $16.34$ mm) $v = 1.6$ or $1.63$

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**5** (a) 54 – 55 [1]

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

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

[1]

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

[Total: 9]