## **CAMBRIDGE INTERNATIONAL EXAMINATIONS**

**Cambridge International General Certificate of Secondary Education** 

## MARK SCHEME for the March 2015 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 March 2015 series for most Cambridge IGCSE® components.



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## NOTES ABOUT MARK SCHEME SYMBOLS & OTHER MATTERS

Brackets ()

Brackets around words or units in the mark scheme are intended to indicate wording used to clarify the mark scheme, but the marks do not depend on seeing the words or units in brackets, e.g. 10 (J) means that the mark is scored for 10, regardless of the unit given.

**Underlining** 

Underlining indicates that this <u>must</u> be seen in the answer offered, or something very similar.

OR / or

This indicates alternative answers or words, any one of which is satisfactory for scoring the marks.

AND

Both answers or words must be given for credit to be awarded.

e.e.o.o.

This means "each error or omission".

o.w.t.t.e.

This means "or words to that effect".

c.a.o.

This means "correct answer only".

NOT

This indicates that an incorrect answer is not to be disregarded, but cancels another otherwise correct alternative offered by the candidate, i.e. right plus wrong penalty applies.

e.c.f.

This means "error carried forward". If a candidate has made an earlier mistake and has carried an incorrect value forward to subsequent stages of working, marks indicated by e.c.f. may be awarded, provided the subsequent working is correct, bearing in mind the earlier mistake. This prevents a candidate from being penalised more than once for a particular mistake, but **only** applies to marks annotated e.c.f.

P	age 3		Paper
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1	(a)	measure $\frac{1}{2}$ mass length either side of 95.0 cm OR mark side of mass AND rule	[1]
	(b)	correct calculations of S, rounding to 0.17, 0.33, 0.51, 0.61, 0.80	[1]
	(c)	axes labelled with quantity and unit appropriate scales plots correct to ½ small square well-judged straight line, thin line, precise plots	[1] [1] [1] [1]
	(d)	(i) G present AND triangle method seen on graph	[1]
		(ii) $M_R$ = in range 113 to 140 g AND to 2/3 sig. fig.	[1]
	(e)	see if rule balances when pivot at 50 cm mark owtte	[1]
			[Total: 9]
2	(a)	units correct, accept symbols or words <i>t</i> values correct: <u>0</u> , 30, 60, 90, 120, 150, 180	[1] [1]
	(b)	statement matching results with <u>comparison</u> of temperature changes over whole available range OR for 120 s from 71 °C	[1]
		justification with mention of 'in the same time' owtte	[1]
	(c)	<ul> <li>two precautions relating to <u>temperature measurement</u>,e.g.</li> <li>thermometer at same depth</li> <li>read thermometer with reading at eye level/90° to scale/explain parallax</li> <li>wait until thermometer has stopped rising (at the start)</li> </ul>	[2]
	(d)	two improvements to apparatus or procedure, e.g.  insulation all way up side of test-tube/covering bottom of test-tube  start taking measurements at same temperature/same initial temp. of water  same volume of water/use measuring cylinder for water  plot cooling curves  use metal/thinner glass test-tubes  more layers of insulation  make sure insulation is dry  avoid overlapping insulation  use same tube/same tube thickness in each experiment	[2]
			[Total: 8]

P	age 4	4	Mark Scheme	Syllabus	Paper
			Cambridge IGCSE – March 2015	0625	62
3	(a)	cor	rect voltmeter symbol with appropriate parallel connection		[1]
	(b)	(i)	meter with 5 V range circled		[1]
		(ii)	arrow indicating 1.5 V on circled meter		[1]
	(c)	Ro	alculations correct (9.6 or 9.62, 7.9 or 7.89, 4.5 or 4.55)		[1]
			nsistent 2 or consistent 3 sig. figs. e: allow 1 sig. fig. fewer for $l=20\mathrm{cm}$		[1]
	(d)		consistent with results ures to support, matching statement – at least two <i>R</i> values compare	ed	[1] [1]
	(e)	use	reased supply voltage e of variable resistor OR variable voltage supply clearly indicated as other suitable point, e.g. voltmeter with larger range ammeter with larger range variable resistor symbol and connection correctly shown	such	[1] [1] [1]
					[Total: 10]
4	(a)	(i)	$u_1 = 5.0(\text{cm})/50(\text{mm})$ $v_1 = 8.7(\text{cm})/87(\text{mm})$		[1] [1]
		(ii)	correct calculation of $f$ , expect 3.1 to 3.2 (cm)/31 to 32 (mm), e.c.f.(a) matching unit	(i)	[1] [1]
	(b)		n range 8.8 to 8.9(cm)/88 to 89(mm) AND statement matching resul propriate justification e.g. within limits of experimental accuracy owtto		[1] [1]
	(c)	two	appropriate precautions, e.g. carry out experiment in dark room/no direct (sun)light/bright lamp lens and object same height above bench lens, object and screen vertical move screen/lens back and forth/slowly to obtain sharp image fix/place rule on bench mark centre of lens on holder readings repeated		[2]

[Total: 8]

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5 (a) $\theta$	$_{\rm H}$ = 74 AND $\theta_{\rm C}$ = 23(°C)		[1]
(b) (i	<ul> <li>suitable reason, e.g.</li> <li>temperature not able to reach max θ<sub>H</sub> (in 30s)</li> <li>temperature dropped on transfer</li> <li>conduction/transfer to metal tongs</li> </ul>		[1
	<ul> <li>matching improvement, e.g.</li> <li>leave block in hot water longer</li> <li>transfer more quickly</li> <li>use insulated tongs/cotton round block</li> </ul>		[1
(ii	<ul> <li>suitable reason, e.g.</li> <li>some (thermal) energy transferred to beaker,</li> <li>some (thermal) energy transferred to surroundings,</li> <li>evaporation/convection (into atmosphere)</li> </ul>		[1]
	<ul> <li>matching improvement, e.g.</li> <li>use a less conducting material for beaker/owtte</li> <li>insulate beaker</li> </ul>		[1

allow for beaker in any calculation

lid on beaker

[Total: 5]