Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

PHYSICS **0625/53**

Paper 5 Practical Test **May/June 2016**

MARK SCHEME

Maximum Mark: 40

Published

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.

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NOTES ABOUT MARK SCHEME SYMBOLS AND 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 must 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.

Question	Answer	Marks
1(a)	S_0 in the range 200 to 600 mm table: S values increasing and first > S_0 e values correct	**1** **1** **1**
1(b)	viewing scale at right angles or use of straight edge, set square, pointer between bottom of spring and scale or other fiducial aid	**1**
1(c)	graph: axes correctly labelled with quantity and unit appropriate scales (plots occupying at least ½ grid) all plots correct to ½ small square well-judged judgement, thin, continuous line, neat plots	 **1** **1** **1** **1**
1(d)	S_X between 3N and 4N in table **and** ($S_X - S_0$) correct method clearly shown on graph W in the range 3.3 to 3.5 **and** correct unit	**1** **1** **1**
		Total 11

Question	Answer	Marks
2(a),(b)	table: °C seen at least once with no contradiction all temperatures recorded temperatures decreasing in all beakers least decrease in beaker **A** / greatest in beaker **B** evidence of temperature readings to at least 1 °C	 **1** **1** **1** **1** **1**
2(c)(i)	first box ticked	**1**
2(c)(ii)	clear reference to readings with examples of temperature differences	**1**
2(d)	any **two** from: • room temperature (or suitable reference to draughts or similar) • starting temperature (of water) • density of packing / amount / type of insulation • thickness of lids / identical lids	**2**
2(e)	perpendicular viewing / view scale at right angles / eye level reading to bottom of meniscus	**1** **1**
		Total 11

Question	Answer	Marks
3(a)(i)	a = 19 to 21 (cm)	**1**
3(a)(ii)	b = 59 to 61 (cm)	**1**
3(a)(iii)	m_1 correct, no unit **and** 2/3 significant figures only	**1**
3(a)(iv)	h_1 = 4.0 to 5.0 (cm)	**1**
3(b)(i)	x = 59 to 61 (cm) **and** y = 19 to 21 (cm)	**1**
3(b)(ii)	m_2 in range. 0.3 to 1.0 **and** $h_2 < 1.5$ (cm) $m_1 \times m_2$ = 0.9 to 1.1	**1** **1**
3(c)	statement matching results justification to include idea of within (or beyond) limits of experimental accuracy	**1** **1**
3(d)	any **two** from: • use of darkened room / brighter lamp / no other lights • mark position of centre of lens on holder • place metre rule on bench (or clamp in position) • ensure object and centre of lens are same height above bench • move the **lens** slowly / to and fro (when focussing) • lens, object and screen vertical / perpendicular to bench • repeat with different D • use of graph paper / cm scale on screen to measure image	**2**
		Total 11

Question	Answer	Marks
4	**circuit diagram** sample of wire must be clearly identifiable by a label on the diagram or by letters on the diagram with an explanation in the text **and** the voltmeter must be in parallel with the **total length of the wire** and an ammeter placed in series with the wire	**1**
	all circuit symbols correct	**1**
	method take readings of V and I	**1**
	use of a variety of lengths	**1**
	range of lengths between 5 cm and 2 m **with the largest length at least twice the smallest**	**1**
	table headings: l / m, V / V, I / A, R / Ω	**1**
	key variables to control any **one** from: • material / resistivity / conductivity of wire • diameter / radius / thickness / cross sectional area of wire • temperature of wire	**1**
		Total 7