Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

PHYSICS **0625/62**

Paper 6 Alternative to Practical **March 2018**

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.

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Generic Marking Principles

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptors for a question. Each question paper and mark scheme will also comply with these marking principles.

GENERIC MARKING PRINCIPLE 1:

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptors for the question
- the specific skills defined in the mark scheme or in the generic level descriptors for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

GENERIC MARKING PRINCIPLE 2:

Marks awarded are always **whole marks** (not half marks, or other fractions).

GENERIC MARKING PRINCIPLE 3:

Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

GENERIC MARKING PRINCIPLE 4:

Rules must be applied consistently e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

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GENERIC MARKING PRINCIPLE 5: Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).
GENERIC MARKING PRINCIPLE 6: Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

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Question	Answer	Marks
1(a)	measure width of mass and add ½ width to mark at edge of mass / mean value of marks at both edges of mass / mark centre line of mass and edge of rule / line up mark through gap in slotted mass	**1**
1(b)	method such as: find point which just tips one way move rule to find point which just tips other way	**1**
	balance point is between these where rule tips either way / owtte	**1**
1(c)(i)	graph:	
	• axes labelled correct orientation, with quantity and unit	**1**
	• appropriate scales (plots occupying at least ½ grid)	**1**
	• plots all correct to ½ small square and precise plots	**1**
	• well judged line and thin line	**1**
1(c)(ii)	*G* present and triangle method seen on graph	**1**
1(c)(iii)	M_R in range 100 g to 400 g	**1**
	2 / 3 significant figures and unit	**1**
1(d)	more accurate and errors have less effect (with larger values) / less % uncertainty	**1**

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Question	Answer	Marks
2(a)(i)	θ for beaker **A** = 87(.0)(°C) and θ for beaker **B** = 89(.0)(°C)	**1**
2(a)(ii)	s, °C, °C all correct	**1**
	30, 60, 90, 120, 150, 180	**1**
2(b)	one precaution e.g.: read at 90° (to scale) / perpendicularly, stir (before reading) / wait until reading stops rising(at start)	**1**
2(c)	conclusion matching results	**1**
	justification matching conclusion with correct mention of comparative temperature change over 0 to 180 s	**1**
2(d)(i)	unit °C / s	**1**
2(d)(ii)	x_1 = 0.094 / ecf and x_2 = 0.067	**1**
2(e)	statement matching results with results used in explanation and reference to different (starting) temperatures for x_1 and x_2	**1**
2(f)	experiment with lid and no insulation	**1**
	experiment with insulation and no lid	**1**

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Question	Answer	Marks
3(a)	correct voltmeter symbol in parallel with lamp **X**	**1**
3(b)	I_S = 0.34 (A)	**1**
3(c)(i)	V_X = 1.2 (V) and V_Y = 1.9 (V)	**1**
3(c)(ii)	V_S present and correct units (A, V) seen in **(b)** and **(c)**	**1**
3(c)(iii)	statement matching results	**1**
	justification matching statement with use of comparative values (e.g. 3.1 and 3.0 are within limits of experimental accuracy)	**1**
3(d)	correct calculation of R_1 (3.5 / ecf)	**1**
3(e)(i)	lamps in parallel arrangement	**1**
	all circuit elements in correct arrangement and all circuit symbols correct	**1**
	resistance increases with temperature	**1**
3(e)(ii)	$R_2 > R_1$ and brighter lamp has higher temperature	**1**

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Question	Answer		Marks
4	MP1	**factor:** clear statement of appropriate variable to test	**1**
	MP2	**control variable:** named variable which should be kept constant	**1**
	MP3	**apparatus:** metre rule and any apparatus essential to variable under test	**1**
	MP4	**method:** measure factor under test and drop ball and measure diameter / depth of depression	**1**
	MP5	repeat for new value of variable under test	**1**
	MP6	**additional point:** repeat experiment or each value of factor and average / means of measuring depth / diameter of crater accurately / apparatus for measuring diameter of ball accurately / measure diameter of ball / crater in different places (and take mean) / smooth / flatten sand surface / at least 5 sets of data taken / reliable means of releasing ball / sensible values for factor quoted	**1**
	MP7	**graph:** diameter / depth of depression vs appropriate continuous variable	**1**

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