Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

PHYSICS **0625/63**

Paper 6 Alternative to Practical **May/June 2019**

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 International will not enter into discussions about these mark schemes.

Cambridge International is publishing the mark schemes for the May/June 2019 series for most Cambridge IGCSE™, Cambridge International A and AS Level and Cambridge Pre-U components, and some Cambridge O Level components.

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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)	(difficult to see centre of block) and valid method, e.g. • (measure width of block and) add ½ width to 5.0 cm to find position for edge of block • mean value of marks at both edges of mass • mark centre line of mass and align with mark on rule	**1**
1(b)(i)	move block back and forth to find the point of balance / owtte	**1**
1(b)(ii)	graph:	
	axes labelled correct orientation, with quantity and unit	**1**
	appropriate scales (plots occupying at least ½ grid)	**1**
	plots all correct to less than ½ small square and precise plots	**1**
	well-judged line and thin line	**1**
1(c)(i)	*G* present and triangle method seen on graph	**1**
1(c)(ii)	M_U in range 61.0 to 81.0 (g)	**1**
	2/3 sig figs and unit	**1**
1(d)	*a* and *b* are proportional	**1**
	b/*a* constant within limits of experimental accuracy / owtte	**1**

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Question	Answer	Marks
2(a)	21 (°C)	**1**
2(b)(i)	s, °C, °C, °C all correct	**1**
	30, 60, 90, 120, 150, 180	**1**
2(b)(ii)	any one from: • place stop-clock and thermometers so seen easily • keep eyes at level to thermometer scales • use an audible 30 s alarm • read temperatures alternately every 15 s • use of data logger	**1**
2(c)	greater temperature difference causes greater (rate of) heating	**1**
	comparison of temperature changes during same period in first half and in second half of experiment	**1**
2(d)(i)	within range 64 to 72 (°C) inclusive	**1**
	justification with reference to hot and cold water trends	**1**
2(d)(ii)	21 (°C) / room temperature	**1**
2(e)	any **two** from: • thinner walls on tube • metal tube • bung/lid on tube • insulate sides of beaker/lid on beaker • higher initial hot water temperature • lower initial cold water temperature • increase volume of hot water • decrease volume of cold water • stirring	**2**

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Question	Answer	Marks
3(a)	correct voltmeter symbol in parallel with **X**	**1**
3(b)	I = 0.22 (A)	**1**
	V = 1.1 (V)	**1**
	A, V, Ω	**1**
3(c)	statement matching results and 'currents the same within limits of experimental accuracy' / owtte	**1**
3(d)(i)	R values 5.0/ecf, 14(.3478), 24/(23.8095) (Ω)	**1**
	consistent 2 or consistent 3 sig figs	**1**
3(d)(ii)	R_Y = 9.0 (Ω) and R_Z = 10 (Ω)	**1**
3(e)(i)	3 resistors in parallel arrangement and circuit symbols correct	**1**
	voltmeter and ammeter in correct arrangement and circuit symbols correct	**1**
3(e)(ii)	$10R_P = R_S$	**1**

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Question	Answer	Marks
4	**MP1 Apparatus** metre rule / measuring tape	**1**
	MP2 Method drop ball from measured height measure height of bounce repeat for different height of release	**1**
	MP3 Precaution any one from: • repeat (for each height of release) and average • measure to same part of ball each time • measure height of bounce at eye level • release without throwing/impeding • use of video (for height of bounce)	**1**
	MP4 Control variable any one from: • same (diameter/mass/material) ball • type of floor covering	**1**
	MP5 Table columns for release height and bounce height and units	**1**
	MP6 Analysis any one from: • suitable analysis of readings • draw a suitable graph of drop height against bounce height	**1**
	MP7 Additional point any one from: • additional control variable • at least 5 sets of data taken • repeat experiment for different diameter of ball/floor covering • automatic release to eliminate differences	**1**

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