Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

PHYSICS **0625/62**

Paper 6 Alternative to Practical **May/June 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)(i)	2 or more measurements seen	**1**
	D_B = 4.8 ± 0.1 (cm)	**1**
1(a)(ii)	D = 6.0 (cm)	**1**
1(b)	1 h = 7.8 (cm) **AND** 2 V = 220(.428) (cm^3)	**1**
1(c)	ρ = 1 / 1.1 / 1.05(…….)	**1**
	2 or 3 significant figures	**1**
	g / cm^3	**1**
1(d)	any **one** from: part **(a)** drawn circle not exact / thickness of rim or cup / thickness of the pencil line part **(b)** difficult to measure the height (in practice) / D^2 increases inaccuracy in D part **(c)** mass of cup has been ignored	**1**
1(e)	diagram showing clearly:	
	line of sight perpendicular to measuring cylinder	**1**
	to the bottom of the meniscus	**1**

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Question	Answer	Marks
2(a)	θ_R = 23(.0) (°C)	**1**
2(b)(i)	ensure thermometer / bulb / alcohol / mercury has reached the temperature of the water	**1**
2(b)(ii)	s / seconds, °C	**1**
2(b)(iii)	*t* values 30, 60, 90, 120, 150	**1**
2(b)(iv)	graph:	
	axes correctly labelled and right way round	**1**
	suitable scales (scales must start below θ_R)	**1**
	all plots correct to ½ small square	**1**
	good line judgement, thin, continuous line	**1**
2(c)	horizontal line at θ_R correctly positioned	**1**
2(d)	any **two** from: perpendicular viewing of thermometer stir (before taking temperature reading) don't let the thermometer (bulb) touch the sides / bottom of beaker wait for thermometer to reach θ_{MAX} before reading	**2**
2(e)	any **two** from: higher starting temperature / use hotter water use of metal can instead of beaker / metal bench lower room temperature / cold water bath use of a fan container with a greater surface area / larger beaker	**2**

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Question	Answer	Marks
3(a)(i)	v = 5.8(0) (cm) / 58 (mm)	**1**
3(a)(ii)	V = 29(.0) (cm)	**1**
3(a)(iii)	f_1 = 11.8(3673) / 12 (cm)	**1**
3(b)	f_A = 12.0 (cm)	**1**
	2 or 3 significant figures	**1**
3(c)	at least 3 new values suggested	**1**
	all new values between 15 cm and 70 cm with at least 5 cm between each value	**1**
3(d)	any **two** from: use of darkened room / brighter lamp mark position of centre of lens on holder place metre rule on bench / clamp in position ensure object and (centre of) lens are same height (from the bench) object and lens and screen perpendicular to bench move screen slowly / back and forth to obtain best image	**2**

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Question	Answer	Marks
4	method to include:	
	place truck on ramp (and release)	**1**
	measure distance (travelled) from bottom of ramp	**1**
	repeat with different mass(es) (loaded on the same truck)	**1**
	additional apparatus:	
	(metre) rule(r) / measuring tape	**1**
	control variables:	
	height / angle of ramp / number of supporting bricks	**1**
	release position / height above bench	**1**
	table with clear columns for mass, and distance travelled, with appropriate units in the headings of the table	**1**

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Additional graph notes:

NOTE: The principle to apply here is 'could I draw a significantly better line, using these points, under examination conditions?' If the answer is definitely 'yes', do not award the mark.

NOTE: – If candidate's scale consists of actual readings at equal intervals this will produce a perfect straight line! The only marks available in this case are the first (axes right way round and labelled) So maximum 1.

– If axes are wrong way round, the other 3 marks are still available.

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