Cambridge O Level

Cambridge Assessment International Education
Cambridge Ordinary Level

PHYSICS **5054/42**

Paper 4 Alternative to Practical **October/November 2018**

MARK SCHEME

Maximum Mark: 30

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 October/November 2018 series for most Cambridge IGCSE™, Cambridge International A and AS Level 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.

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.

Question	Answer	Marks
1(a)(i)	0.85 (mA)	**B1**
1(a)(ii)	to ensure that the water is at a uniform temperature / to uniformly distribute the heat	**B1**
1(b)	axes labelled quantity and unit and axes correct way round	**B1**
	scales linear, not awkward, start from (0,0)	**B1**
	points plotted accurately, to the nearest ½ square	**B1**
	smooth, thin best-fit curve drawn	**B1**
1(c)(i)	correct reading from candidate's graph	**B1**
1(c)(ii)	(add melting) ice to the beaker	**B1**
1(d)(i)	2.6 ± 0.1 (mA)	**B1**
1(d)(ii)	correct conversion from mA to A seen anywhere	**B1**
	correct calculation from candidate's results	**B1**
1(e)(i)	as the temperature increases, the current increases	**B1**
	non-linearly / non-uniformly / not proportionately / graph is not a straight line / at an increasing rate	**B1**
1(e)(ii)	as the temperature increases, the resistance decreases	**B1**

Question	Answer	Marks
2(a)(i)	x = 2.6 (cm)	**B1**
	y = 7.8 (cm)	**B1**
2(a)(ii)	u = 20.8 (cm) and v = 62.4 (cm)	**B1**
2(b)	15.6	**C1**
	16 (cm)	**A1**
2(c)	move screen slowly / to and fro until sharpest focus obtained repeat each reading and average object / lens / screen perpendicular to bench object and lens same height above the bench carry out experiment away from other bright light sources / darkened room take reading perpendicular to scale or ruler / avoidance of parallax described Any 1 · 1 mark	**B1**

Question	Answer	Marks
3(a)(i)	0.915 (s)	**C1**
	0.92 (s)	**A1**
3(a)(ii)	the data is only given to 2 decimal places / there is a large variation in the raw data	**B1**
3(b)(i)	measuring tape	**B1**
3(b)(ii)	282.6 (280 / 283 / 300) (m / s) [284.2 (m / s) if 0.915 s used]	**B1**
3(b)(iii)	distance is only approximate / difficult to measure distance accurately / difficult to coordinate claps with the echoes / reaction time errors	**B1**

Question	Answer	Marks
4(a)	dot / mark / cross (at end(s) of compass needle)	**B1**
	move compass, (make new dot)	**B1**
	join the dots and repeat at a different starting point / more than one complete field line drawn on diagram	**B1**
	all 3 marks can be scored from a well-drawn diagram	
4(b)	direction or strength of the field / field is from N to S / like poles repel	**B1**