Cambridge O Level

Cambridge Assessment International Education
Cambridge Ordinary Level

PHYSICS **5054/41**

Paper 4 Alternative to Practical **October/November 2019**

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 2019 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)	moves the screen forwards and backwards / moves screen slowly	**B1**
1(b)(i)	6(.0 cm) and 4.3 (cm) ±0.1 (cm)	**B1**
1(b)(ii)	2.5 (cm)	**B1**
1(b)(iii)	repeat (and average)	**B1**

Question	Answer	Marks
2(a)(i)1	2.2 cm	**B1**
2(a)(i)2	correctly drawn centred on 5.0 cm	**B1**
2(a)(ii)	to ensure that the correct number of rings is recorded / to ensure the rings are placed in correct position / to know when ruler is close to balance	**B1**
2b)(i)	axes labelled quantity and unit, correct way round	**B1**
	scales linear from (0,0), not awkward	**B1**
	points plotted accurately	**B1**
	best fit curve drawn	**B1**
2(b)(ii)	lines clearly shown on the graph	**B1**
	range 50 to 53	**B1**
2(b)(iii)	114	**C1**
	110	**A1**
2(b)(iv)	balance	**B1**
2(c)	use rings of smaller mass / use combination of heavier rings and smaller rings to get balanced	**B1**

Question	Answer	Marks
3(a)	ammeter in series	**B1**
	voltmeter in parallel across lamp	**B1**
3(b)(i)	adjust the (variable) resistor / resistance / number of cells / use battery of different voltage / use variable power source /	**B1**
3(b)(ii)	1.2(0) A and 1.65 A	**B1**
3(b)(iii)	3.3(3) ohms and 4.8(5) ohms both correct with unit (seen at least once)	**B1**
3(c)	brighter	**B1**
	hotter / bulb blows	**B1**

Question	Answer	Marks
4(a)	supply of ice	**B1**
	place thermometer in melting ice / ice and water	**B1**
4(b)	place thermometer in / above boiling water	**B1**
	beaker / test-tube / means of holding water	**B1**
4(c)	calibrate / graduate the thermometer	**B1**
	place thermometer in the room and read the temperature **OR** explain how the calibration was done	**B1**