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CAMBRIDGE
International Education

Cambridge IGCSE™

PHYSICS **0625/52**

Paper 5 Practical Test **May/June 2024**

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 2024 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 descriptions 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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Acronyms and shorthand in the mark scheme

Acronym / shorthand	**Explanation**
Brackets ( )	Words not explicitly needed in an answer, however if a contradictory word / phrase / unit to that in the brackets is seen the mark is not awarded.
Underlining	The underlined word (or a synonym) must be present for the mark to be scored. If the word is a technical scientific term, the word must be there.
/ or **OR**	Alternative answers any one of which gains the credit for that mark.
owtte	Or words to that effect.
ignore	Indicates either an incorrect or irrelevant point which may be disregarded, i.e., not treated as contradictory.
insufficient	An answer not worthy of credit on its own.
CON	An incorrect point which contradicts any correct point and means the mark cannot be scored.
ecf [question part]	Indicates that a candidate using an erroneous value from the stated question part must be given credit here if the erroneous value is used correctly here.
cao	Correct answer only.
ORA	Or reverse argument.

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Question	Answer	Marks
1(a)(i)	t recorded and in the range 16.5 to 19.5 (s)	**1**
1(a)(ii)	T calculation correct from candidate's values	**1**
1(a)(iii)	time more than 20 oscillations	**1**
1(a)(iv)	k_1 calculation correct and 2 or 3 significant figures	**1**
1(b)(i)	l recorded to the nearest millimetre	**1**
1(b)(ii)	all values of l present and decreasing	**1**
1(b)(iii)	graph: • appropriate scales (plots occupying at least ½ grid between plotted points)	**1**
	• plots all correct to ½ small square and precise plots	**1**
	• well-judged line and thin line	**1**
1(b)(iv)	any indication on the graph as to how gradient found and correct method of calculation of gradient i.e., $\Delta y / \Delta x$ shown	**1**
1(b)(v)	k_2 calculation correct using candidate's **(b)(iv)**	**1**
1(c)	statement to match candidate's values of k_1 and k_2	**1**
	values used in a calculation to justify the statement	**1**

Question	Answer	Marks
2(a)	V and I present and readings to at least 1 d.p for voltage and 2 d.p. for current	**1**
2(b)	both readings present	**1**
	$I <$ **(a)**	**1**

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Question	Answer	Marks
2(c)	$I_{20} < I_{13}$	1
2(d)	all *R* calculations correct	1
	R values in the range 1.0 Ω to 5.0 Ω inclusive	1
2(e)(i)	as the current decreases the potential difference / voltage across the diode remains (fairly) constant / decreases (slightly)	1
2(e)(ii)	as the current decreases the resistance increases	1
2(f)	diode / power supply / ammeter connected: the wrong way around / flipped / in the wrong direction **OR** voltmeter connected in series	1
2(g)	variable resistor <u>and</u> correct symbol	1

Question	Answer	Marks
3(a)	60 (°) ± 1	1
3(b)	two crosses present and cross separation ⩾ 5 cm	1
3(c)(i)	EJ recorded and measured correctly ± 1 mm	1
3(c)(ii)	*d* recorded and measured correctly ± 2 mm	1
3(c)(iii)	d / l in the range 0.40 to 0.45 inclusive	1
3(d)	thickness of the light rays / difficulty in aligning incident ray with FE / difficulty of placing crosses accurately / difficult to judge the centre of the ray	1
3(e)	repeat with $\theta = 60°$ on the other side of the normal **OR** repeat with optical pins	1
3(f)(i)	*L* recorded to the nearest mm	1

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Question	Answer	Marks
3(f)(ii)	ratio correct from candidate's values	**1**
3(f)(iii)	*n* value in the range 1.40 to 1.65	**1**

Question	Answer	Marks
4	**MP1** **variable chosen:** valid variable which may affect *d*	**1**
	MP2 **additional apparatus:** ruler / measuring tape **AND** additional apparatus (if needed) to measure the independent variable	**1**
	MP3 **method:** • (place ball and release), measure dependent variable • repeat for new value of independent variable	**1**
	MP4 **control variables:** any significant variable appropriate to the independent variable	**1**
	MP5 **table:** columns, with units, for independent variable and dependent variable	**1**
	MP6 **conclusion:** compare readings in the table to see if / how a change in the variable produces change in *d* **OR** plot a (line) graph with axes specified	**1**
	MP7 **additional point:** any **one** from: • second valid control variable stated • at least 5 sets of data taken • repeat each measurement **AND** take the average	**1**

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