Cambridge O Level

Cambridge Assessment International Education
Cambridge Ordinary Level

PHYSICS **5054/32**

Paper 3 Practical Test **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.

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)	one from: used ruler to check equal height above bench of each end / checked to see if card parallel to distant horizontal object (e.g. window sill or door frame) ; i.e. how to ensure **and** conditions for being horizontal	**1**
1(b)(i)	average of two or more measurements ; (t_A =) 7.0 ± 1.5 s ;	**2**
1(b)(ii)	$t_C < t_B < t_A$ **And** t values to at least 1 d.p. ;	**1**
1(c)	The furth**er** the masses from the springs the long**er** the time (of the oscillation) *or* the clos**er** the masses the short**er / smaller** the time ;	**1**

Question	Answer	Marks
2(a)	h = 35.0 ± 2.0 **and** W_1 = 12.0 ± 1.0 **and** W_2 = 4.0 ± 1.0 ; mm ;	**2**
2(b)	t_1 in range 3.7 to 4.6 s ;	**1**
2(c)	$t_2 < t_1$ by 0.2 s or more ;	**1**
2(d)	($t_2 < t_1$) because **more** PE available to be transferred to KE when the release is from the narrow end ;	**1**

Question	Answer	Marks
3(a)(i)	lines starting at 30 mm from spot s (starting from line AA) **and** divergent lines representing rays marked and labelled R_1 and R_2 ;	**1**
3(a)(ii)	R_1 and R_2 traced back to spot s (but not behind spot s unless marked as dotted or dashed lines when they are behind s) **and** angle θ labelled ;	**1**
3(a)(iii)	(θ =) 45° ± 5° ;	**1**
3(b)	(as *d* increases) θ decreases ; **smaller rate of decrease** in θ as *d* gets larger ; owtte	**2**

Question	Answer	Marks
4(a)(i)	1.0 V ⩽ V ⩽ 4.0 V ;	**1**
4(a)(ii)	any reasonable description that will make the measurement more accurate e.g. Repeat **and** average make sure connections are secure and tight (and tighten them if not) ;	**1**
4(b)(i)	less than **(a)(i)** ;	**1**
4(b)(ii)	$\frac{\text{their } \mathbf{(b)(i)}}{10\,000}$;	**1**
4(b)(iii)	0.1 to 4.5 kilo ohm ;	**1**
4(c)	headings and units ;	**1**

Question	Answer	Marks
4(d)	at least 5 complete rows ; 7 complete rows and V_{AC} constant and consistent sig figs down each column ; as n increases. $\mathbf{V_{AB}}$ measurements show a **decreasing** trend, **current decreasing**, **resistance increasing** ; V_{AB} decreases by larger amounts as n increases ;	**4**
4(e)(i)	axes labelled, with unit for resistance (k ohm) and correct orientation ; suitable scale, ⩾ ½ page in both directions ; points plotted correctly as fine points or crosses ; best fit increasing curve and fine line ;	**4**
4(e)(ii)	A correct **shallower**, labelled curve under first curve **and** meeting first curve when number of sheets = 0 ;	**1**