Cambridge O Level

Cambridge Assessment International Education
Cambridge Ordinary Level

PHYSICS **5054/31**

Paper 3 Practical Test **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.

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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(b)	1.8 to 2.2 (cm) ;	**1**
1(c)(ii)	4.0 to 11.0 (cm) **and** deducts answer to **(a) ;**	**1**
1(c)(iii)	0.25 × (their e) **(c)(ii)** × 0.25 **and** N ;	**1**
1(d)	2 < t < 50 s **and** to 1 dp ;	**1**
1(e)	(0.030 × their F) / (their t) i.e. (P =) 0.03 × **(c)(iii)** ÷ d ;	**1**

Question	Answer	Marks
2(a)(i)	20 > u > 16.5 ;	**1**
2(a)(ii)	115 – **(a)(i) ;**	**1**
2(a)(iii)	**One** suitable difficulty from the following: • ruler vertical • parallax error **qualified** • knowing where the filament /centre of the lens is • keeping metre rule still • effect of lens on magnifying / diminishing bulb ;	**1**
2(b)	*f* in the range 14.1 to 15.6 (2) ;; Allow 1 mark for *f* in the range from 13.1 to 16.1	**2**

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Question	Answer	Marks
3(a)	supervisor's value / CV $\pm$ 5 g ;	**1**
3(b)	eye horizontal (or level) with scale **and** bottom of meniscus ; **or** diagram clearly showing eye at right angles to the base of meniscus **and** the scale reading ;	**1**
3(c)(i),(ii)	Their m_2 – their m_1 ((from 87 to 95) + answer **(a)**) **and** (**(c)(i)** – **(a)**) ;	**1**
3(d)	**(c)(ii)** ÷ 100 **and** g / cm^3 ; i.e. their mass × 0.01 with correct unit ;	**2**

Question	Answer	Marks
4(a)	4.5 $\pm$ 0.5 (V) ;	**1**
4(b)(i)	Temperature greater than 70 °C ; 0.5 V < V_{AB} < 2.5 V ;	**2**
4(b)(ii)	at least 7 readings ;	**1**
4(c)	headings + units in the top row ; temperature / °C | V_{AB} / V | V_t / V | Current / A | Resistance / Ω $V_t = V_s - V_{AB}$ calculated in column 3 **and** $I = V_{AB} \div 47$ calculated in column 4 ; $R_t = V_t \div I$ calculated in column 5 ; the change in the resistance increases with decreasing temperature ;	**4**

Question	Answer	Marks
4(d)	Axes labelled with units and correct orientation ; Suitable scale, ⩾ ½ page in both directions ; Two points plotted correctly (check two points) ; best fit **curved** line and fine points or crosses ;	**4**
4(e)	tangent at 65 ºC ;	**1**
	calculation of G to 2 or 3 s.f. ;	**1**
	from a large triangle with one side at least five cm long ;	**1**

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