Cambridge O Level

Cambridge Assessment International Education
Cambridge Ordinary Level

PHYSICS **5054/32**

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(a)(i)	4.5 to 15.49 (cm) ;	**1**
1(a)(ii)	1.8 to 2.2 (cm) **and** deducted from **(a)(i)** ;	**1**
1(a)(iii)	their *e* × 0.25 (or divided by 4) **and** N ;	**1**
1(b)	at least two sensible values averaged ;	**1**
1(c)	(*P* =) 0.2 × **(a)(iii)** ÷ **(b)** ;	**1**

Question	Answer	Marks
2(a)	*V* in the range from 1.5 to 2.4 (V) **and** *I* in the range from 0.1 to 0.3 (A) ;	**1**
2(b)	*V* > **(a)** **and** *I* < **(a)** for 2 lamps in series ; *V* < **(a)** **and** *I* > **(a)** for 2 lamps in parallel **and** *V* higher **and** *I* lower for 2 lamps in parallel than for 3 lamps in parallel ;	**2**
2(c)	correct calculation of resistance ;	**1**
2(d)	resistance of lamp / filament increases (as current heats wire as lamp gets hot) or wtte;	**1**

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Question	Answer	Marks
3(a)(i)/(ii)	**x** on diagram between the lamp and lens **and** 25 ⩾ answer ⩾ 15 cm to nearest mm ;	**1**
3(a)(iii)	1.0 (cm) ⩽ answer ⩽ 3.0 (cm) ;	**1**
3(b)(i),(ii)	l_0 present and realistic **and** • Not able to measure l_0 with rule touching filament / glass bulb prevents ruler from touching filament • possible parallax error when reading scale with qualification • glass bulb may distort apparent length of filament ;	**1**
3(c)	their $l_i \div l_o$;	**1**
3(d)	Yes / no or same / not same or wwte **and** Calculated value of *m* **and** valid explanation: • values are close / not close enough / allowing for experimental error / within a given percentage • values round to same whole number / first decimal place / 2 sig figs ;	**1**

Question	Answer	Marks
4(a)	d_0 within ±2 cm of Supervisor's value recorded to nearest mm ;	**1**
4(b)	mass = 5 × **(a)** ;	**1**
4(c)	*d* value larger than in **(a) and** < 50 cm ; mass of 30 ml oil = 27.6 (g) / within range 25.5 to 29.7 when rounded ;	**2**

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<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th></tr>
<tr><td>4(d)</td><td>headings and units ;
<table><tr><td>volume / cm^3</td><td>distance / cm</td><td>mass / g</td></tr></table>
at least 5 complete rows ;
d_m increasing by about 5 cm per 30 cm^3 ;
mass calculations correct ;</td><td>4</td></tr>
<tr><td>4(e)</td><td>axes labelled with units and correct orientation ;
suitable scale with plotted data occupying ⩾ ½ page in both directions with no scale errors ;
points plotted correctly ;
best fit straight line and fine points or crosses ;</td><td>4</td></tr>
<tr><td>4(f)(i)</td><td>from a large triangle ⩾ half the drawn line ;
correct calculation of G to 2 or 3 s.f. ;</td><td>2</td></tr>
<tr><td>4(f)(ii)</td><td>the gradient is the density ;</td><td>1</td></tr>
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