Cambridge IGCSE™

PHYSICS **0625/33**

Paper 3 Core Theory **October/November 2022**

MARK SCHEME

Maximum Mark: 80

Published

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Question	Answer	Marks
1(a)(i)	9 (min)	**B1**
1(a)(ii)	7.5 (m / s)	**B1**
1(a)(iii)	C	**M1**
	greatest slope / greater change of speed in same time interval owtte	**A1**
1(b)	3.8 (m / s)	**A3**
	5200 ÷ 1380	(C2)
	(average speed =) (total) distance ÷ (total) time in any form	(C1)

Question	Answer	Marks
2(a)(i)	rule(r) / metre stick / tape measure	**B1**
2(a)(ii)	place n tiles on top of each other owtte AND n = 10 or more	**B1**
	measure the (total) thickness of more than one tile	**B1**
	divide by n AND n = 2 or more	**B1**
2(b)(i)	(volume =) (25 × 20 × 0.30 =) 150 (cm^3)	**B1**
2(b)(ii)	2.7	**A3**
	410 ÷ 150 OR 410 ÷ (their ans **(b)(i)**)	(C2)
	density = mass ÷ volume in any form	(C1)
	g / cm^3	**B1**
2(b)(iii)	4.1(0) (N)	**A3**
	0.41(0)	(C1)
	(W =) m × g OR m × 10 in any form	(C1)

Question	Answer	Marks
3(a)	thermal	**B1**
	kinetic	**B1**
	(loud)speaker / buzzer / bell / headphones / earbuds	**B1**
3(b)(i)	1 chemical (to) kinetic	**B1**
	2 gravitational OR potential	**B1**
3(b)(ii)	energy transferred to ground / surroundings / thermal energy	**B1**

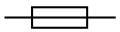
Question	Answer	Marks
4(a)(i)	liquid	**B1**
4(a)(ii)	A ... melting	**B1**
	B ... boiling	**B1**
4(b)	line starts below freezing point and ends above boiling point	**B1**
	line ends before 30 min	**B1**
	horizontal lines at melting point AND boiling point at correct temperature	**B1**
4(c)	arrangement: solid: regular OR close together owtte	**B1**
	gas: irregular / random OR far apart	**B1**
	movement: solid: <u>vibration</u> owtte	**B1**
	gas: fast moving OR colliding OR random	**B1**

Question	Answer	Marks
5(a)(i)	ray continues normally into glass	**B1**
5(a)(ii)	one correct normal seen	**B1**
5(a)(iii)	ray is totally internally reflected at a glass / air boundary	**B1**
	ray emerging from hypotenuse	**B1**
5(b)(i)	orange – between red and yellow	**B1**
	blue – between green and indigo	**B1**
5(b)(ii)	wavelength	**B1**

Question	Answer	Marks
6(a)	<u>focal</u> length	**B1**
6(b)	paraxial ray to lens	**B1**
	ray passes through F OR ray passing through principal focus on lhs paraxial ray on rhs	**B1**
6(c)	labelled inverted arrow from where (their) rays cross to principal axis	**B1**
6(d)	diminished	**B1**
	inverted	**B1**

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th></tr>
<tr><td>7(a)(i)</td><td>echo</td><td>B1</td></tr>
<tr><td>7(a)(ii)</td><td>
<table>
<tr><th>property</th><th>same</th><th>different</th></tr>
<tr><td>speed</td><td>✓</td><td></td></tr>
<tr><td>wavelength</td><td>✓</td><td></td></tr>
<tr><td>loudness</td><td></td><td>✓</td></tr>
<tr><td>frequency</td><td>✓</td><td></td></tr>
<tr><td>amplitude</td><td></td><td>✓</td></tr>
<tr><td>longitudinal</td><td>✓</td><td></td></tr>
</table>
</td><td>B3</td></tr>
<tr><td>7(b)(i)</td><td>stopwatch</td><td>B1</td></tr>
<tr><td rowspan="3">7(b)(ii)</td><td>340 (m / s)</td><td>A3</td></tr>
<tr><td>(2 × 520) ÷ 3.1 OR 1040 ÷ 3.1</td><td>(C2)</td></tr>
<tr><td>(distance =) 2 × 520 OR 1040 OR (speed =) distance ÷ time in any form</td><td>(C1)</td></tr>
</table>

Question	Answer	Marks
8(a)	radio waves	**B1**
	microwaves	**B1**
	X-rays OR (visible) light	**B1**
8(b)	any **two** from the following: travel through a vacuum travel at same speed / 3×10^8 (m / s) transverse	**B2**
8(c)	any **two** from the following: limit exposure time use tongs / distance / remote working lead shield / gloves / apron wear dosimeter owtte	**B2**

Question	Answer	Marks
9(a)(i)	**any three** from: damaged insulation owtte coiled cables damp / wet conditions 5 A / thin cable connected to (10 A) kettle owtte	**B3**
9(a)(ii)	overheating / fire	**B1**
	electric shock	**B1**
9(b)(i)	a. c. (power) supply	**B1**
9(b)(ii)		**B1**
9(b)(iii)	to protect a circuit / prevents excess currents owtte	**B1**
9(b)(iv)	easy to reset / quick to reset OR reusable	**B1**
9(c)	13 A	**B1**

Question	Answer	Marks
10(a)(i)	gamma / γ	**B1**
10(a)(ii)	alpha / α	**B1**
10(a)(iii)	alpha / α	**B1**
10(b)(i)	53	**B1**
10(b)(ii)	78	**B1**
10(c)	200 (counts / s)	**A2**
	1600 – 800 – 400 – 200 OR idea of 3 half lives	(C1)