

Cambridge IGCSE™

PHYSICS**0625/32**

Paper 3 Core Theory

March 2020

MARK SCHEME

Maximum Mark: 80

Published

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This document consists of **11** printed pages.

Question	Answer	Marks
1(a)	(average thickness =) $2.4 \div 8$	C1
	(average thickness =) 0.3 (cm)	A1
1(b)	any four from: measuring cylinder partially filled with water / displacement can filled with water volume of water recorded / empty measuring cylinder under spout coin(s) in water OR water covers all coin(s) new volume noted / displaced water collected in measuring cylinder (average) volume of a coin = increase in volume OR increase in volume $\div$ number of coins	B4

Question	Answer	Marks
2(a)	moment = force $\times$ distance from pivot in any form	C1
	(distance of force from pivot = $(25 - 10) =$) 15 (cm)	C1
	8×15	C1
	120	A1
	N cm	B1
2(b)	arrow giving clockwise moment	B1
	arrow drawn 10 cm from pivot by eye	B1

Question	Answer	Marks
3(a)	$W = m \times g$ in any form	C1
	0.12×10	C1
	(weight =) 1.2 (N)	A1
3(b)	Line from T–U to decreasing acceleration	B1
	Line from U–V to moving with constant speed	B1
3(c)	(distance travelled =) area under the graph	C1
	2×20	C1
	40 (m)	A1
3(d)	20 OR answer = (c) answer $\div$ 2	B1

Question	Answer	Marks
4(a)	thermal (energy)	B1
	light (energy)	B1
4(b)	chemical (energy)	B1
4(c)	energy transferred from cell = energy dissipated in lamp	B1

Question	Answer	Marks
5(a)	Any three from: kinetic energy (of wind / air) turns / drives turbine (blades) (turbine blades) turn generator coil turns in magnetic field	B3
5(b)(i)	any one from: a dilute source of energy dependent on weather / intermittent supply	B1
5(b)(ii)	any two from: renewable source of energy no atmospheric pollution conserves fossil fuels do not contribute to global warming	B2

Question	Answer			Marks																		
6(a)	<table><tr><th>statement</th><th>gas</th><th>solid</th></tr><tr><td>molecules are closely packed</td><td></td><td>✓</td></tr><tr><td>molecules are free to move around from place to place</td><td>✓</td><td></td></tr><tr><td>molecules are far apart compared to their size</td><td>✓</td><td></td></tr><tr><td>molecules can only vibrate about a fixed position</td><td></td><td>✓</td></tr><tr><td>molecules change position randomly</td><td>✓</td><td></td></tr></table>			statement	gas	solid	molecules are closely packed		✓	molecules are free to move around from place to place	✓		molecules are far apart compared to their size	✓		molecules can only vibrate about a fixed position		✓	molecules change position randomly	✓		B4
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6(b)(i)	Brownian (movement)			B1																		
6(b)(ii)	any three from: air consists of particles / is not continuous (fluid) air particles bombard / collide with smoke (particles) air particles moving (freely) at high speed air particles moving randomly air particles are very small (compared with smoke particles)			B3																		

Question	Answer	Marks
7(a)	hydrogen (gas)	B1
7(b)(i)	27 (°C)	B1
7(b)(ii)	–10 (°C) to 110 (°C)	B1
7(b)(iii)	0 (°C) AND 100 (°C)	B1
7(c)	use / consequence of thermal expansion identified	B1
	description of effect	B1
	explanation of effect	B1

Question	Answer	Marks
8(a)(i)	(amplitude =) 0.9 (cm)	B1
8(a)(ii)	(wavelength =) $112 \div 8$	C1
	(wavelength =) 14 (cm)	A1
8(a)(iii)	(frequency =) $8 \div 2$	C1
	(frequency =) 4 (Hz)	A1
8(b)(i)	bottom left box labelled infrared	B1
	bottom right box labelled ultraviolet	B1
8(b)(ii)	treating cancer / identifying cancer / gamma ray photography / sterilise medical equipment	B1

Question	Answer	Marks
9(a)(i)	normal at X correct by eye	B1
9(a)(ii)	reflected ray for Y has angle $i = \text{angle } r$ by eye	B1
9(b)	horizontal ray drawn to continue through F	B1
	ray to centre drawn to continue undeviated	B1
	image drawn correctly where rays cross	B1

Question	Answer	Marks
10(a)(i)	(soft) iron (bar)	B1
10(a)(ii)	<u>variable</u> resistor	B1
10(a)(iii)	any two from: increasing the resistance (will) decrease the current (decreasing the current will) decrease the strength (of the electromagnet)	B2
10(b)	$(R =) V \div I$ in any form	C1
	$(R =) 12 \div 1.5$	C1
	$(R =) 8.0 \text{ } (\Omega)$	A1

Question	Answer	Marks
11(a)(i)	the ammeters all have the same reading	B1
11(a)(ii)	the reading on A ₁ is the biggest	B1
11(a)(iii)	lamps have normal brightness (in parallel) or brighter (than lamps in series)	B1
	If one lamp fails the other lamp is still lit	B1
11(b)(i)	24 (Ω)	B1
11(b)(ii)	(resistance of one lamp / 12 (Ω)) is more (than the combined resistance (of lamps in parallel))	B1

Question	Answer	Marks
12(a)(i)	146	B1
12(a)(ii)	positive	B1
	95	B1
12(b)	tick in 3rd box	B1
	tick in 4th box	B1
12(c)	idea of 2 half-lives	C1
	$(432 \times 2) = 864$ (years)	A1