



Cambridge IGCSE™

PHYSICS**0625/33**

Paper 3 Core Theory

October/November 2021**MARK SCHEME**

Maximum Mark: 80

Published

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This document consists of **13** printed pages.

Question	Answer	Marks
1(a)	weight / gravitational force / attraction (acting downwards)	B1
1(b)	area under the graph / line	C1
	$\frac{1}{2} \times 1.8 \times 16$	C1
	14 (m)	A1

Question	Answer	Marks
2(a)	12.6	C1
	$12.6 \div 14$	C1
	0.9(0) (cm)	A1
2(b)	(D =) $M \div V$ in any form	C1
	$183 \div 250$	C1
	0.73 (g / cm ³)	A1
2(c)	float AND (peas / it) less dense (than salt water)	B1

Question	Answer	Marks
3(a)	40 (N)	B1
	forward / to the right	B1
3(b)	accelerates / speed increases	B1
3(c)	constant / uniform speed / zero acceleration	B1

Question	Answer		Marks
4(a)(i)	energy cannot be created or destroyed OR energy can only be transferred from one form to another OR total energy remains the same		B1
4(a)(ii)	500 – 50		C1
	450 (J)		A1
4(a)(iii)	temperature (of air) increases / increases internal energy		B1
4(b)	situation	<i>form of energy stored</i>	B1
	<i>a mobile phone battery</i>	chemical	
	situation	<i>form of energy stored</i>	B1
	<i>a piece of coal</i>	chemical	
	situation	<i>form of energy stored</i>	B1
	<i>a rotating wheel</i>	kinetic	
	situation	<i>form of energy stored</i>	B1
	<i>water behind a hydroelectric dam</i>	(gravitational) potential	

Question	Answer	Marks
5(a)(i)	25 (°C)	B1
5(a)(ii)	20 (°C)	B1

Question	Answer	Marks
5(a)(iii)	(block reaches) room / surrounding temp OR no (net) energy transfer	B1
5(b)(i)	line starts at 80 (°C)	B1
	<u>curve with negative gradient always above</u> curve for block A	B1
	line above 20 (°C) after 10 min	B1
5(b)(ii)	black better / best emitter ora	B1

Question	Answer	Marks
6(a)(i)	(circles) touching / no gaps (by eye)	B1
	regular arrangement	B1
6(a)(ii)	<u>large(r)</u> separation (by eye)	B1
	random arrangement	B1
6(a)(iii)	melting	B1
6(a)(iv)	condensing / condensation	B1
6(b)(i)	Brownian / random (motion)	B1
6(b)(ii)	sharp changes of direction	B1
	random	B1
6(b)(iii)	slower / moving with less (kinetic) energy OR fewer collisions / changes of direction	B1

Question	Answer	Marks
7(a)	1.27 1.34 1.44	C1
	$(1.27 + 1.34 + 1.44) \div 3$ OR $(4.05) \div 3$	C1
	1.4 (s)	A1
7(b)(i)	tape (measure)	B1
7(b)(ii)	(speed =) $d \div t$ in any form	C1
	$415 \div 1.29$	C1
	320 (m / s)	A1

Question	Answer	Marks
8(a)(i)	normal	B1
8(a)(ii)	b	B1
8(a)(iii)	e	B1
8(b)(i)	top ray continued through F on right hand side of lens	B1
	lower ray continued parallel to principal axis (by eye)	B1
8(b)(ii)	arrow drawn from where their rays cross to principal axis	B1
8(b)(iii)	diminished	B1
	inverted	B1

Question	Answer	Marks
9(a)(i)	the same as	B1
9(a)(ii)	larger than	B1
9(a)(iii)	the same as	B1
9(a)(iv)	smaller than	B1
9(b)	same brightness / if one fails the rest are still lit / lamps can be switched off independently / same p.d. across owtte	B1
9(c)	$V = I \times R$ in any form ($R = V \div I$)	C1
	$12 \div 0.048$	C1
	250	A1
	Ω / ohms	B1

Question	Answer	Marks
10(a)	any four from: step up: increase voltage / high voltage in power lines lower current reduce power / energy losses step down: lower voltage / low voltage in homes safety/match for appliances / machines thinner cables (can be used)	B4
10(b)	$V_p / V_s = N_p / N_s$ in any form	C1
	$V_s = (500 / 2000) \times 240$	C1
	60 (V)	A1

Question	Answer				Marks
11(a)		<i>type of radioactive emission</i>	<i>nature</i>	<i>charge</i>	B1
		<i>alpha (α)</i>	<i>helium nucleus</i>	positive/+	
		<i>type of radioactive emission</i>	<i>nature</i>	<i>charge</i>	B1
		<i>beta (β)</i>	electron	<i>negative</i>	
		<i>type of radioactive emission</i>	<i>nature</i>	<i>charge</i>	B2
		<i>gamma (γ)</i>	(electromagnetic/em) wave	no charge/neutral	
11(b)(i)	alpha / α				B1
11(b)(ii)	gamma / γ				B1
11(c)(i)	selects a count rate value and another count rate that is half this value e.g. 800 AND 400, OR 560 AND 280				C1
	4 (min)				A1
11(c)(ii)	70 (counts / s)				B1