

Cambridge IGCSE™

PHYSICS	0625/33
Paper 3 Core Theory	
MARK SCHEME	May/June 2023
Maximum Mark: 80	

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 May/June 2023 series for most Cambridge IGCSE, Cambridge International A and AS Level and Cambridge Pre-U components, and some Cambridge O Level components.

Question	Answer	Marks
1(a)(i)	60 (km)	B1
1(a)(ii)	40 (km)	B1
1(b)(i)	2 (h)	B1
1(b)(ii)	3 (h)	B1
1(c)	(speed =) distance / time in any form OR gradient of line	C1
	40 / 3	C1
	13 (km / h)	A1

Question	Answer	Marks
2(a)(i)	(the) Sun	B1
2(a)(ii)	generator	B1
2(b)	any two from: • no gaseous / SO₂ emissions / air pollution • does not contribute to global warming / CO₂ • do not use fossil fuels • renewable	B2

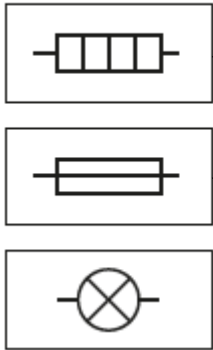
Question	Answer	Marks
3(a)(i)	(moment =) force $\times$ (perpendicular) distance in any form	C1
	0.14×5.5	C1
	0.77 (N cm)	A1
3(a)(ii)	(sum of) ACM = (sum of) CM	C1
	$0.19 \times X = 0.77$ OR $0.19 \times X = 0.8$ OR $0.19 \times X = 0.14 \times 5.5$	C1
	4.1 (cm) OR 4.2 (cm)	A1
3(b)	($m =$) $W \div g$ OR $W \div 9.8$ in any form	C1
	$0.19 \div 9.8$	C1
	0.019 (kg)	A1

Question	Answer	Marks
4(a)(i)	(liquid / it) expands	B1
4(a)(ii)	273 + 18	C1
	291 (K)	A1
4(b)	pressure decreases	B1
	any two from: • particles slower / less kinetic energy • collisions (with wall) less frequent • collide (with wall) with less force	B2
4(c)	$(F =) P \times A$ in any form	C1
	$102\,000 \times 0.0082$	C1
	840 (N)	A1

Question	Answer	Marks
5(a)	$18.2 \div 7$	C1
	2.6 (cm)	A1
5(b)(i)	17.24 AND 17.14 AND 17.16 (s)	B1
5(b)(ii)	$(17.24 + 17.14 + 17.16) \div 3$ OR $51.54 \div 3$	C1
	17.18 (s)	A1
5(b)(iii)	$50 \div 17.18$	C1
	2.9 (Hz)	A1
5(c)	(speed =) frequency $\times$ wavelength in any form	C1
	2.4×0.025	C1
	0.06(0) (m/s)	A1

Question	Answer	Marks
6(a)(i)	ultraviolet / UV (in LH space)	B1
	microwaves (in RH space)	B1
6(a)(ii)	any two from: - transverse wave - do not need a medium / travel through a vacuum (travel) the same speed / 3×10^8 m/s (in vacuum / air)	B2
6(b)(i)	security scanners / kill cancer cells / shrink tumours / detecting art fraud	B1
6(b)(ii)	limited exposure owtte / shield using screen / lead apron / increase distance from source owtte	B1

Question	Answer	Marks
7(a)	any four from: - draw round the block (on the paper) - use ray box to shine a ray through block - draw crosses on incident and emergent rays - draw ray through block - draw normals - measure angles between rays and normals	B4
7(b)	Image I_1 is real but image I_2 is virtual . Image I_1 is inverted but image I_2 upright . 4 correct – 3 marks 3 or 2 correct – 2 marks 1 correct – 1 mark if no marks scored but all three or four characteristics named, award 1 mark	B3

Question	Answer	Marks
8(a)	electrical symbol  circuit component fuse lamp heater thermistor	B1
		B1
		B1
8(b)(i)	$(R =) V \div I$ in any form	C1
	$12 \div 0.38$	C1
	$32 (\Omega)$	A1
8(b)(ii)	$(P =) IV$ in any form	C1
	12×0.38	C1
	4.6	A1
	W OR watts	B1

Question	Answer			Marks
9(a)(i)	type of particle	name	sign of charge	B3
	A	electron	negative / –	
	B	neutron	neutral / no charge / zero / 0	
	C	proton	positive (+)	
	4 correct – 3 marks 3 or 2 correct – 2 marks 1 correct – 1 mark			
9(a)(ii)	same number of protons / proton number / atomic number / Z			B1
	different number of neutrons / nucleon number / mass (number) / A			B1
9(b)	cosmic (radiation)			B1
9(c)(i)	86			B1
9(c)(ii)	222			B1

Question	Answer	Marks
10(a)(i)	Mercury (nearest to Sun)	B1
	Mars (between Earth and Jupiter)	B1
10(a)(ii)	(circular / oval) path round Jupiter	B1
10(a)(iii)	rocky OR furthest planets are gaseous owtte	B1
	small(er) OR furthest planets large(r)	B1
10(a)(iv)	(the) Milky Way	B1
	(the) Universe	B1
10(b)	(time =) distance ÷ speed in any form	C1
	$1.5 \times 10^{11} \div 3.0 \times 10^8$	C1
	500 (s)	A1