

Cambridge IGCSE™

PHYSICS	0625/32
Paper 3 Core Theory	February/March 2023
MARK SCHEME	
Maximum Mark: 80	

Published

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Question	Answer	Marks
1(a)	(average thickness =) 1.4 (mm)	A2
	(average thickness =) $56 \div 40$	(C1)
1(b)	any three from: measuring cylinder (partially) filled with water (initial) volume measured / noted strip submerged in water (new / 2nd) volume (of strip and water) measured	B3
	volume of strip = difference in volumes	B1
1(c)	(ρ =) 8.92	A3
	(ρ =) $296 \div 33.2$	(C2)
	(density =) mass $\div$ volume OR (ρ =) m / V in any form	(C1)
	g / cm ³	B1

Question	Answer	Marks
2(a)(i)	(length of spring with 8.0 N load =) 20 (cm)	B1
2(a)(ii)	(load for length of 21 cm =) 9.3 (N)	A2
	(extension of 7 cm = length of) 21 cm	(C1)
2(b)	shape	B1

Question	Answer	Marks
2(c)	(m =) 0.88 (kg)	A3
	(m =) $8.6 \div 9.8$	(C2)
	$W = mg$ OR (m =) $W \div g$	(C1)

Question	Answer	Marks
3(a)(i)	(speed =) 25 (m / s)	A3
	(speed =) $250 \div 10$	(C2)
	(speed =) gradient of d-t graph OR $d \div t$ in any form	(C1)
3(a)(ii)	(QR –) at rest or stationary	B1
3(b)	any two from (wide tyres have) large (contact) area (so) less pressure (on ground) so less likely to sink (into soft ground)	B2

Question	Answer	Marks
4(a)(i)	any two from: high speed moving freely random (motion) OR (moving in) any / all directions	B2
4(a)(ii)	collisions (of particles with walls of cylinder OR surface)	B1

Question	Answer	Marks
4(b)	any three from: pressure increases (because) molecules are closer together / more densely packed OR area of cylinder decreases (so there are) more collisions per unit area (with walls of cylinder) pressure = force $\div$ area	B3

Question	Answer	Marks
5(a)	(work done =) 60 (J)	A3
	(work done =) $12 \times 5(.0)$	(C2)
	(work done =) force $\times$ distance in any form	(C1)
5(b)	chemical store (in candle) decreases	B1
	energy is transferred by radiation / light / em / IR waves	B1
	thermal store of surroundings has increased owtte	B1

Question	Answer	Marks
6(a)(i)	2.0 (cm)	B1
6(a)(ii)	(so frequency =) 5.0 (Hz)	A2
	(frequency =) number of waves (sent out) per s / unit time OR time for 1 wave = 0.2 s OR 2 waves in 0.4 s	(C1)
6(b)	vibrations OR oscillations (of particles)	B1
	at right angles OR perpendicular	B1
	to direction of propogation	B1

Question	Answer	Marks
6(c)	(v =) 360 (m / s)	A3
	(v =) 400×0.90	(C2)
	(v =) $f\lambda$	(C1)

Question	Answer	Marks
7(a)	same size (as object / book)	B1
	same distance <u>from mirror</u> (as book / object)	B1
	virtual	B1
7(b)	(use:) security marking OR detecting fake bank notes OR sterilising water	B1
	(harmful effect:) damage to surface cells / skin OR eyes OR damage to cells / genes / DNA OR skin cancer	B1

Question	Answer	Marks
8(a)	negative charges OR electrons	B1
	move from rod OR move to cloth	B1
8(b)	(ball Q is) positive	B1
	(ball R is) negative	B1
8(c)	(free) electrons	B1

Question	Answer	Marks
9(a)(i)	(I =) 6.8 (A)	A4
	(I =) $1500 \div 220$	(C2)
	$P = I \times V$ OR (I =) $P \div V$	(C1)
	1.5 kW = 1500 W	(C1)
9(a)(ii)	(cost of energy =) 84 (p)	A3
	(cost of energy =) $1.5 \times 4(.0) \times 14$	(C2)
	(cost of energy =) power $\times$ time $\times$ cost of 1 kW h OR number of kW h $\times$ cost of 1 kW h	(C1)
9(b)	large current (in extension lead / socket)	B1
	(can cause) overheating / fire	B1

Question	Answer	Marks
10(a)	any three from (when switch S closed) current in coil P coil P has (changing) magnetic field magnetic field (from P) links with / cuts coil Q e.m.f. / voltage / current induced / produced / generated in coil Q	B3
10(b)	two coils (of copper wire)	B1
	(wrapped around / linked by soft) iron core	B1
	more turns on secondary coil OR less turns on primary coil	B1

Question	Answer	Marks
11(a)	95	B1
	146	B1
11(b)	(amount remaining =) 3(.0) (mg)	A3
	(amount remaining =) $12 \times \frac{1}{2} \times \frac{1}{2}$ OR $12 \times \frac{1}{4}$	(C2)
	860 years is 2 half-lives	(C1)

Question	Answer	Marks
12(a)	(closest to Sun) Mercury (furthest from Sun) Venus Earth	B2
12(b)	distance	M1
	travelled by light (in the vacuum of space) in one year	A1
12(c)	2.6×10^3 (s) OR 2600 (s)	A2
	time = distance $\div$ speed OR $7.8 \times 10^{11} \div 3.0 \times 10^8$ OR 780 000 000 000 $\div$ 300 000 000	(C1)