



Cambridge IGCSE™

PHYSICS

0625/32

Paper 3 Core Theory

February/March 2022

MARK SCHEME

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 February/March 2022 series for most Cambridge IGCSE™, Cambridge International A and AS Level components and some Cambridge O Level components.

This document consists of **15** printed pages.

Question	Answer	Marks
1(a)	(weight =) 3(.0) (N)	A3
	300 g = 0.3 kg	(B1)
	(weight =) mass $\times$ g	(C1)
1(b)(i)	66.4(0) (s)	B1
1(b)(ii)	3.3(2) (s)	A2
	66.4 $\div$ 20	(C1)
1(c)	any two from: (stored energy OR elastic potential energy OR it) decreases kinetic energy (of masses) increases <u>gravitational</u> potential energy increases	B2

Question	Answer	Marks
2(a)	45 (Nm)	A3
	(moment of force =) force $\times$ (perpendicular) distance (of force from pivot)	(C1)
	50 $\times$ 0.9	(C2)
2(b)(i)	(section AB) increasing speed OR acceleration	B1
	(section DE) stationary OR stopped OR at rest	B1
2(b)(ii)	20 (m)	A3
	(distance =) $\frac{1}{2} \times 8(.0) \times 5(.0)$	(C2)
	distance travelled = area under graph OR (d =) speed $\times$ time	(C1)

Question	Answer	Marks
3(a)	(volume =) 48 (cm ³)	A2
	(volume =) $l \times b \times h$	(C1)
3(b)(i)	11 (g / cm ³)	A2
	(density =) $86 \div 8.0$	(C1)
3(b)(ii)	any value greater than (b)(i) (g / cm ³)	B1
3(c)	any three from: measure mass of (empty) measuring cylinder on balance add liquid to measuring cylinder AND read volume measure mass of measuring cylinder AND liquid on balance find difference in the 2 mass readings	B3

Question	Answer	Marks
4(a)	water flows / falls / moves (through pipes to turbines)	B1
	(water) turns / drives / spins turbine	B1
	turbine drives / turns / spins generator	B1
4(b)	any two from: renewable (form of energy) no greenhouse gases OR CO ₂ produced (during operation) no SO ₂ OR nitrous oxides produced OR acidic gases produced (during op.) no fuel to transport power output adjustable to meet demand creates lakes for recreation / tourism	B2

Question	Answer	Marks
4(c)	any two from: large area of land flooded / needed damage to wildlife habitats population displacement limited number of suitable sites changes to water provision (downstream) (output) can be affected by lack of rain/drought	B2

Question	Answer	Marks
5(a)	(resultant force =) 30 (N)	A2
	(resultant force =) 120 – 90	(A1)
	to the left OR forwards	B1
5(b)	(pressure =) 28	A4
	(pressure =) $900 \div 32$	(C3)
	(total area =) $(4 \times 8 =) 32 \text{ (cm}^2\text{)}$	(B1)
	(pressure =) force $\div$ area	(C1)
	N / cm ²	B1

Question	Answer	Marks
6(a)	any two from: (move at) high speed random directions collisions (with other molecules / walls)	B2
6(b)	slow(er) (average speed)	B1
6(c)	(particles) collide (with walls of container) any one from:	B1
	(collisions) apply force to walls (sum of)force(s) spread over area	B1

Question	Answer	Marks
7(a)	conduction	B1
7(b)	any three from: convection (heated water) expands (becomes) less dense <u>less dense</u> water rises OR <u>dense(r)</u> water sinks	B3
7(c)	(dull) black (can)	M1
	(black) is a better absorber (of thermal radiation) OR white can is a better reflector	A1

Question	Answer	Marks
8(a)(i)	one amplitude drawn on diagram labelled A	B1
8(a)(ii)	one wavelength drawn on diagram labelled L	B1
8(b)(i)	at least 3 wavefronts reflected from barrier	B1
	direction of (wavefront) motion vertically down the page.	B1
8(b)(ii)	at least 3 semi-circular wavefronts after gap showing diffraction (centred on gap)	B1
	wavefronts with same wavelength as before gap	B1

Question	Answer	Marks
9(a)(i)	microwaves	B1
9(a)(ii)	frequency	B1
9(b)	any two from: imaging / scanning bones / internal organs treating cancer bone density measurements security scans (of baggage / parcels / freight at port / airport) space telescopes	B2
9(c)	any two from: (X-rays OR they) are ionising radiations (X-rays) damage (body) cells / tissue / DNA cause mutations / cancer	B2

Question	Answer	Marks
10(a)(i)	correct symbol for voltmeter	B1
	meter connected in parallel with LDR	B1
10(a)(ii)	270 (Ω)	A3
	$5.4 \div 0.02(0)$	(C2)
	$V = IR$ or $(R =) V/I$	(C1)
10(b)	$(150 + 180 =) 330 (\Omega)$	B1

Question	Answer	Marks
11(a)	20 (V)	A3
	$V_s / 240 = 48 / 590$ OR $V_s = (48 / 590) \times 240$ OR $V_s = 240 \div 12.3$ OR $48 / 590 = ? / 240$ OR $\frac{240 \times 48}{590}$	(C2)
	$V_s / V_p = N_s / N_p$ in any form	(C1)
11(b)	large current (in fuse)	B1
	(causes) fuse to melt	B1
	isolating appliance from supply OR prevents / stops current in appliance / circuit	B1

Question	Answer	Marks
12(a)(i)	(1st column:) electron	B1
	(2nd column:) plus two OR +2	B1
	(3rd column:) high	B1
12(a)(ii)	gamma OR γ	B1
12(b)	(X is a) proton(s)	B1
	(Y is a) neutron(s)	B1