

Cambridge IGCSE™

PHYSICS	0625/31
Paper 3 Core Theory	
MARK SCHEME	May/June 2021
Maximum Mark: 80	

Published

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Question	Answer	Marks
1(a)(i)	constant speed/velocity OR (moving at) 6 m / s	B1
1(a)(ii)	(constant) deceleration/decelerating OR (then) slows OR decreasing speed	B1
1(a)(iii)	(distance =) area under graph OR $\frac{1}{2} \times b \times h$	C1
	$40 \times 6 \times 0.5$	C1
	120 (m)	A1
1(b)(i)	(speed =) distance $\div$ time	C1
	$710 \div 87$	C1
	8.2 (m / s)	A1
1(b)(ii)	horizontal line on Fig. 1.1	M1
	horizontal line only at 8.2 m / s OR 8.0 m / s (by eye) to at least 80 s	A1

Question	Answer	Marks
2(a)(i)	$12 \div 1000 = 0.012$ (kg)	C1
	0.012×10	C1
	= 0.12 (N)	A1
2(a)(ii)	(density =) mass $\div$ volume OR (d =) m $\div$ v	C1
	$12 \div 0.88$	C1
	14 (g / cm ³)	A1

Question	Answer	Marks
2(b)(i)	middle box ticked (mass stays the same)	B1
2(b)(ii)	top box ticked (density decreases)	B1

Question	Answer	Marks
3(a)	moment = force $\times$ distance (of direction of force from pivot)	C1
	404×1.2	C1
	484.8 (N m) (which is about 480 N m)	A1
3(b)	c.w. moment = a.c.w moment OR moment of weight = moment of force/F	C1
	$404 \times 1.2 = F \times 1.6$ OR ($F =$) $484.8 \div 1.6$	C1
	($F =$) 300 (N)	A1

Question	Answer	Marks
4(a)	any four from: (coal/it is) burnt/burned (thermal energy from coal used to) heat/boil water steam (produced) turns/spins/moves turbine (which) turns/spins/moves generator	B4
4(b)	idea that only a small proportion/fraction of the input energy is usefully transferred OR most of the input energy is wasted	B1

Question	Answer	Marks
4(c)	any two from: releases sulphur dioxide/nitrogen oxide(s) OR produces acid rain releases CO ₂ /greenhouse gases OR (contributes to) global warming idea of need to transport coal idea of environmental impact of mining non-renewable fuel water pollution	B2

Question	Answer	Marks
5(a)(i)	8 (N)	B1
	forwards	B1
5(a)(ii)	same non-zero values for pulling and friction force	B1
5(b)	(area = 2×0.60) = 1.2 (cm ²)	B1
	(P =) $F \div A$	C1
	$150 \div 1.2$ OR $150 \div 0.60$	C1
	125 (N/cm ²)	A1

Question	Answer	Marks
6(a)	Brownian (motion)	B1
6(b)	any three from: air molecules (air molecules) collide with (smoke particle) (air molecules) moving randomly (air molecules/collisions) cause change in direction (of smoke particle) (air molecules moving with) high speed idea of more collisions on one side (of particle at a given time)	B3

Question	Answer	Marks
7(a)	any 6 correct colours from: red, orange, yellow, green, blue, indigo, violet	M1
	candidate's colours in correct order	A1
7(b)(i)	refraction	B1
7(b)(ii)	dispersion	B1
7(c)	infrared (rays/waves) (are used in tv remote controllers)	B1
	gamma (rays/waves) (have the highest frequencies in em spectrum)	B1

Question	Answer	Marks
8(a)(i)	amplitude	B1
8(a)(ii)	frequency	B1
8(b)(i)	160 (m)	B1
8(b)(ii)	$(s =) d \div t$ (speed of sound =) distance $\div$ time	C1
	$160 \div 0.56$	C1
	290 (m/s)	A1
8(b)(iii)	any two from: use something to give sharper sound stand further away from wall no other walls nearby both students stand at 80 (m)/same distance (from wall) repeat (the measurement/experiment) AND average (results)	B2

Question	Answer	Marks
9(a)(i)	plastic AND wood	B1
9(a)(ii)	iron	B1
9(b)	N S S N	B1
9(c)	(electromagnet can be) switched off OR switched on	B1

Question	Answer	Marks
9(d)	feature 1: top box ticked (200 turns)	B1
	feature 2: middle box ticked (iron)	B1
	feature 3: bottom box ticked (3.0 A)	B1

Question	Answer	Marks
10(a)(i)	$(3.0 + 5.0 =) 8.0 (\Omega)$	B1
10(a)(ii)	0.5(0) (A)	B1
10(b)	(current/reading) increases	B1
	(because circuit) resistance decreases	B1
	(circuit)resistance becomes less than $3(.0)\Omega$ OR less than smallest resistor (value) OR current/reading more than doubles	B1
10(c)	$V = IR$ or $(R =) V/I$	C1
	$6.0 \div 0.4$	C1
	15 (Ω)	A1

Question	Answer	Marks
11(a)	top box ticked (alternating)	B1
11(b)	any two from: increase strength of magnet/magnetic field increase speed of magnet increase number of turns (of wire in coil)	B2

Question	Answer	Marks
12(a)(i)	uranium-235 AND uranium-238	B1
12(a)(ii)	plutonium(-238) AND uranium-238	B1
12(a)(iii)	plutonium(-238)	B1
12(b)	idea of 3 half-lives OR $72 \div 24$	B1
	$40 \div 8$	C1
	5(.0) (mg)	A1