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Cambridge International General Certificate of Secondary Education

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Paper 3 Core Theory	October/November 2018
MARK SCHEME	
Maximum Mark: 80	

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This document consists of **12** printed pages.



Question	Answer	Marks
1(a)(i)	1.24 (s) AND 1.14 (s) AND 1.16 (s)	B1
1(a)(ii)	$(1.24 + 1.14 + 1.16) \div 3$ OR $3.54 \div 3$	C1
	1.18 (s)	A1
1(b)	(average speed =) dist $\div$ time	C1
	$12 \div 1.6$	C1
	7.5 (m / s)	A1
1(c)	distance travelled = area under graph OR counting squares	C1
	4.5×0.75	C1
	3.375 OR 3.4	A1

Question	Answer	Marks
2(a)	$W = m g$ OR $(m =) W / g$ OR $3.0 \div 10$	C1
	0.3 (kg)	A1
2(b)(i)	determine / read volume of water in measuring cylinder	B1
	(submerge / sink) metal in water / measuring cylinder	B1
	determine / read new volume of water (and metal)	B1
	find difference between final and initial volumes	B1
2(b)(ii)	wood floats OR does not sink	B1
2(b)(iii)	$D = M / V$ OR $405 \div 150$	C1
	2.7	A1
	g / cm^3	B1

Question	Answer	Marks
3(a)	Kinetic OR movement energy from wind OR moving air	B1
	<u>turns</u> turbine	B1
	turbine turns generator (to generate electricity)	B1
3(b)	Any two advantages from: reliable supply of electricity large amount of electrical energy produced / power output plentiful supply of fuel	B2
	Any two disadvantages from: non-renewable (energy source) greenhouse gases / carbon dioxide produced / increases global warming contributes to atmospheric / air pollution / acid rain	B2

Question	Answer	Marks
4(a)(i)	solid AND gas / vapour	B1
4(a)(ii)	melting AND condensing	B1
4(b)	3rd box ticked: The particles are a similar distance apart as those in a solid.	B1
	5th bottom box ticked: The particles move randomly.	B1

Question	Answer	Marks
5(a)	A	B1
5(b)	number of (complete) waves produced by source / passing a point	B1
	each second / in unit time	B1
5(c)(i)	longitudinal	B1
5(c)(ii)	sound wave	B1
5(c)(iii)	85–99 (cm)	B1

Question	Answer	Marks
6(a)(i)	<i>i</i> placed between incident ray and normal	B1
6(a)(ii)	ray refracted towards normal at 1st surface	B1
	ray refracted down at 2nd surface	B1
6(b)(i)	<u>dispersion</u>	B1
6(b)(ii)	violet	B1

Question	Answer	Marks
7(a)	3rd box – sound travels slower than the speed of light	B1
7(b)	2nd box – 20 to 20000 Hz	B1
7(c)	3rd box – Increasing the amplitude of a sound wave increases its loudness	B1
7(d)	3rd box – an echo is produced when sound is reflected	B1

Question	Answer	Marks
8(a)	N and S labelled at either end of magnet correct field line shown above magnet correct field line shown below magnet field points in direction N to S	B4
8(b)(i)	electromagnet	B1
8(b)(ii)	(soft iron) filings attracted, but (most) fall off when switch opened	B1
8(b)(iii)	(steel) (most / more / they) remain attached when switch opened	B1

Question	Answer	Marks
9(a)	$A_2 = 0.6 \text{ A}$ AND $A_3 = 0.6 \text{ A}$	B1
9(b)	40 (Ω)	B1
9(c)(i)	current from source is higher than in each lamp or reverse argument	B1
9(c)(ii)	(combined) resistance of lamps in parallel is less / lower (than one lamp)	B1
9(d)	$V = IR$ in any recognisable form	C1
	$V = 0.30 \times 140$	C1
	42	A1
	V or volts	B1

Question	Answer	Marks
10(a)(i)	(name:) (fixed) <u>resistor</u>	B1
	(purpose:) (to) reduce current	B1
10(b)(i)	a.c. / alternating (current)	B1
10(b)(ii)	motor / fan AND lamp	B1
10(b)(iii)	(the motor / fan / it) slows (down) owtte	B1
10(c)	(hazard:) live wire touching case OR user gets electric shock / burns OR (electrical) fire OR overheating / wire gets hot	B1
	(safety feature:) case is earthed	B1

Question	Answer	Marks
11(a)(i)	arrow <u>up</u> from side WX of coil AND an arrow <u>down</u> from side YZ of coil	B1
11(a)(ii)	any three from: stronger / more powerful magnets smaller gap between coil and magnet(s) larger current in coil more coils / turns	B3
11(b)	$V_p / V_s = N_p / N_s$ OR ratio used	C1
	$4000 \div (225 \div 4.5)$ OR $(4000 \times 4.5) \div 225$ OR $4000 \div 50$	C1
	80	A1

Question	Answer	Marks
12(a)	(forms of the same element that have) same number of protons / proton number / atomic number	B1
	different number of neutrons / nucleon number	B1
12(b)	less (ionising) than alpha particle OR more (ionising) than gamma	B1
	more (penetrating) than alpha OR less (penetrating) than gamma	B1
12(c)	indication of two half-lives	C1
	$\frac{1}{4}$ OR 0.25 OR 25%	A1