Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

PHYSICS **0625/32**

Paper 3 Core Theory **May/June 2017**

MARK SCHEME

Maximum Mark: 80

Published

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Question	Answer	Marks
1(a)	flexible rule/tape measure/measuring tape	**B1**
1(b)(i)	58.75 (s)	**B1**
1(b)(ii)	speed = distance ÷ time in any form	**C1**
	0.85 (m / s)	**A1**
1(b)(iii)	7.12 (s)	**B1**
	Total:	**5**

Question	Answer	Marks
2(a)(i)	6500 (g)	**B1**
2(a)(ii)	density = mass ÷ volume in any form	**B1**
	1.3	**A1**
	g / cm^3	**B1**
2(b)	density (of brush) is less (than) density of paint	**B1**
	Total:	**5**

Question	Answer	Marks
3(a)	weight = mass × gravitational field strength in any form	**C1**
	20.0 × 10.0	**C1**
	200 (N)	**A1**
3(b)(i)	moment = force × (perpendicular) distance (from pivot) in any form	**C1**
	180.0 × 2.5	**C1**
	450 (N m)	**A1**
3(b)(ii)	2nd box down ticked decrease the length of the arm holding the sun-shade	**B1**
	Total:	**7**

Question	Answer	Marks
4(a)	radiation	**B1**
4(a)(ii)	thermometer near door or B is at higher temperature	**B1**
	any 2 from: darker colours are better absorbers (of thermal energy) darker colours are better emitters (of thermal energy) white/lighter colours are better reflectors (of thermal energy) white/lighter colours are poorer absorbers (of thermal energy) white/lighter colours are poorer emitters (of thermal energy)	**B2**
4(b)	any 3 from: cold air is denser (than warm air) cold air will fall the cold air is warmed and expands less dense/warm air rises or replaces the cold air (forming a) convection (current)	**B3**
	Total:	**7**

Question	Answer	Marks
5(a)	any two from: more collide with walls more often so pressure is greater (inside bag)	**B2**
5(b)	density (of sea water) depth (of sea water) (in either order)	**B2**
5(c)(i)	barometer	**B1**
5(c)(ii)	3.4 or 1.3 seen	**C1**
	2.1	**C1**
	1035.7	**A1**
	Total:	**8**

Question	Answer	Marks
6(a)(i)	normal line drawn at 90° to mirror by eye	**B1**
6(a)(ii)	reflected ray drawn with $i = r$ by eye	**B1**
6(a)(iii)	angle of incidence = angle of reflection	**B1**
6(a)(iv)	Mark is for the explanation linked to candidate's diagram. e.g. if answer is YES they should state that the reflected ray hits/reaches the (other)driver/car or can be seen	**B1**
6(b)(i)	ray refracted toward the normal	**B1**
6(b)(ii)	angle of incidence labelled	**B1**
	angle of refraction labelled	**B1**
	Total:	**7**

Question	Answer	Marks
7(a)(i)	visible light	**B1**
	gamma rays	**B1**
7(a)(ii)	wavelength	**B1**
	frequency	**B1**
7(b)	(sound) is a longitudinal wave (radio waves are transverse) (sound) needs a medium to be transmitted (but radio waves do not)	**B1**
7(c)	any four from: only award 4 marks if valid procedure (use tape measure) to measure distance of at least 100 m blocks banged together stopwatch started when blocks are SEEN to hit stopwatch stopped when sound heard time taken recorded/calculated speed = distance ÷ time	**B4**
	Total:	**9**

Question	Answer	Marks
8(a)	At least 2 curves drawn from one end of magnet to the other	**B1**
	pattern is symmetrical by eye above and below middle of magnet	**B1**
	Arrow from N to S	**B1**
8(b)	any 2 from: magnet/block/metal placed in coil coil connected to d.c. supply (d.c.) current in coil (for short time)	**B2**
8(c)	tick in 4th box steel	**B1**
	Total:	**6**

Question	Answer	Marks
9(a)	arrow drawn pointing from C to D	**B1**
	arrow on /near side CD pointing upwards	**B1**
9(b)	any 2 from: increase (size of) current increase strength of magnet increase number of turns in coil	**B2**
9(c)(i)	electrons	**B1**
9(c)(ii)	current is smaller	**B1**
	(as) resistance of coil/wire is greater	**B1**
	Total:	**7**

Question	Answer	Marks
10(a)	in any order: cells/battery (connected) incorrectly voltmeter used instead of ammeter thermistor symbol used instead of LDR symbol	**B3**
10(b)(i)	resistance decreases as brightness increases	**B1**
10(b)(ii)	(resistance at 60% full brightness) = 2000 (ohms)	**B1**
	resistance = voltage ÷ current in any form e.g. $I = \frac{V}{R}$	**C1**
	8.0 ÷ 2000	**C1**
	4×10^{-3} (A)	**A1**
	Total:	**8**

Question	Answer	Marks
11(a)	protects circuit if current too large	**B2**
11(b)(i)	copper	**B1**
11(b)(ii)	$\frac{N_S}{N_P} = \frac{V_S}{V_P}$ in any form	**C1**
	$\frac{16}{224} = \frac{N_S}{308}$ or $\frac{224}{16} = \frac{308}{N_S}$	**C1**
	22 (turns)	**A1**
	Total:	**6**

Question	Answer	Marks
12(a)	proton	**B1**
	positive or +1	**B1**
12(a)(ii)	tick in third box	**B1**
12(b)	idea of mass being halved, e.g. 0.5	**C1**
	0.25 (mg)	**A1**
	Total:	**5**