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Cambridge International General Certificate of Secondary Education

PHYSICS **0625/33**

Paper 3 Core Theory **October/November 2017**

MARK SCHEME

Maximum Mark: 80

Published

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Question	Answer	Marks
1(a)(i)	A **AND** B cars identified	**B1**
	A = fastest AND B = slowest	**B1**
1(a)(ii)	speed = distance ÷ time in any recognised form	**C1**
	50 ÷ 4	**C1**
1(b)(i)	12.5 (m / s)	**A1**
	100 × 3.6 **OR** 360 (s) indicated	**C1**
	answers in the range 5–7 minutes	**A1**
1(b)(ii)	any one from:	
	car will move faster / slower at times / speed not constant	**B1**
	road will have bends / hills etc.	
	slower moving traffic or other sensible road conditions	

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Question	Answer	Marks
2(a)	measuring cylinder (partially filled) with water / displacement can filled with water	**B4**
	object (submerged) into water owtte	
	new volume noted / displaced water collected in measuring cylinder	
	(volume of object =) difference in volumes / volume of water collected	
2(b)	density = mass ÷ volume written in any recognised form	**C1**
	347 ÷ 18	**C1**
	19.28 **OR** 19.3 (g / cm^3)	**A1**

Question	Answer	Marks
3(a)	$w = m \times g$ in any recognised form	**C1**
	2250 / 10	**C1**
	225 (kg)	**A1**
3(b)(i)	moment = force × distance from pivot in any recognised form	**C1**
	400 × 0.4 **OR** 400 × 40	**C1**
	160 **OR** 16 000	**A1**
	Nm **OR** Ncm	**B1**
3(b)(ii)	apply force further from pivot owtte	**B1**

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Question	Answer	Marks
4(a)(i)	elastic	**B1**
4(a)(ii)	elastic	**B1**
	kinetic	**B1**
4(a)(iii)	kinetic	**B1**
	thermal	**B1**
4(b)	pull band further back / exert greater force on band / increase elastic potential energy	**B1**

Question	Answer	Marks
5(a)	Tyre B	**B1**
	larger / bigger surface area	**B1**
	less pressure (on ground) / weight distributed	**B1**
5(b)	molecules gain kinetic energy / move faster	**B1**
	more (frequent) / harder collisions (with tyre)	**B1**
	Increased / greater pressure (on tyre)	**B1**

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Question	Answer	Marks
6(a)(i)	mercury	**B1**
6(a)(ii)	arrow between 0 °C and start of capillary tube	**B1**
6(a)(iii)	0 (°C) **AND** 100 (°C)	**B1**
6(b)	emitter	**B1**
	conductor	**B1**
	convection	**B1**
	radiation	**B1**

Question	Answer	Marks
7(a)	wavelength correctly indicated	**B1**
7(b)	12 (cm)	**B1**
7(c)	40 / 60	**C1**
	0.67 (Hz)	**A1**
7(d)	direction of travel perpendicular to direction of vibration owtte	**B1**
7(e)	any component of the electromagnetic spectrum	**B1**

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Question	Answer	Marks
8(a)(i)	top ray passes through f_2	**B1**
	bottom ray passes through f_2	**B1**
	refraction correctly shown either at centre of lens **OR** at both edges of lens	**B1**
8(a)(ii)	C to f_2	**B1**
8(b)(i)	critical angle	**B1**
8(b)(ii)	ray internally reflected	**B1**
	reflecting angle = incident angle	**B1**

Question	Answer	Marks
9(a)	light travels faster than sound **OR** reverse argument	**B1**
9(b)	reflection (from building) / bouncing back (from building)	**B1**
9(c)	time taken for first sound = 0.5 s	**C1**
	Time taken for echo = 2.5 s **OR** time for sound to travel from hammer and return = 2.0 s	**C1**
	2.0 s	**A1**
9(d)	quieter / less amplitude / less energy	**B1**

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Question	Answer	Marks
10(a)(i)	two curved field lines drawn above and below the magnet	**B1**
	lines start and finish at the poles of the magnet	**B1**
10(a)(ii)	both arrows point left	**B1**
10(a)(iii)	(plotting) compass	**B1**
10(b)	place end on end / see if attraction / repulsion occurs	**B1**
	repulsion at one end	**B1**

Question	Answer	Marks
11(a)	ammeter in series	**B3**
	voltmeter across wire	
	two cells correctly linked positive to negative	
11(b)	V = IR in any recognised form	**C1**
	R = 2.7 ÷ 0.3	**C1**
	9 (Ω)	**A1**
11(c)	1 higher / more	**B1**
	2. lower / less	**B1**

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Question	Answer	Marks
12(a)	Gamma	**B1**
12(b)	1 helium nuclei **OR** nuclide notation **OR** 2p, 2n	**B1**
	2 low / few cm of air / stopped by paper	**B1**
12(c)	2 half-life indicated	**B1**
	25 (%)	**B1**

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