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Cambridge International General Certificate of Secondary Education

PHYSICS **0625/32**

Paper 3 Core Theory **October/November 2019**

MARK SCHEME

Maximum Mark: 80

Published

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Question	Answer	Marks
1(a)(i)	13.2(0) (s)	**B1**
1(a)(ii)	13.2 ÷ 30	**C1**
	0.44 (s)	**A1**
1(a)(iii)	reduces the effects of (timing / reaction time) errors owtte	**B1**
1(b)	Drops are accelerating **OR** moving with increasing speed	**B1**
1(c)	distance = area under graph OR ½ × b × h	**C1**
	0.5 × 1.5 × 15	**C1**
	11.25 (m)	**A1**

Question	Answer	Marks
2(a)	Any **four** from: pour some water into measuring cylinder record volume / reading of water (in measuring cylinder) place metal in water (in cylinder and completely submerge) record volume of water and metal (in cylinder) subtract starting volume from final volume (to give volume of metal)	**B4**
2(b)(i)	balance	**B1**
2(b)(ii)	density = mass ÷ volume	**C1**
	146 ÷ 20	**C1**
	7.3	**A1**
	g/cm^3	**B1**

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Question	Answer	Marks
3(a)(i)	10 (N) AND forwards/to the right	**B1**
3(a)(ii)	friction (between swimmer and water)	**B1**
3(a)(iii)	(now) moving at steady/constant speed	**B1**
	forces (now)balanced / in equilibrium **OR** forward force = backward force OR no resultant force	**B1**
3(b)	moment = force × (perp.) distance (from pivot)	**C1**
	700 × 3.5	**C1**
	2450 (N m)	**A1**

Question	Answer	Marks
4(a)	below	**B1**
4(b)	B A D C	**B3**

Question	Answer	Marks
5(a)	gas AND oil both circled	**B1**
5(b)	water is heated / **changed to steam** as it passes through (fractures in) rocks	**B1**
	steam turns a turbine	**B1**
	the turbine drives a generator	**B1**
	generator produces electricity	**B1**

Question	Answer	Marks
6(a)(i)	mercury or alcohol	**B1**
6(a)(ii)	0 (°C) **AND** 100 (°C)	**B1**
6(b)(i)	conduction	**B1**
6(b)(ii)	Any **three** from: (heat causes) water molecules (to) move further apart OR (hot) water expands / volume increases (hot water) is less dense NOT molecules less dense/expand (so hot / less dense) water rises (and is replaced by cooler / more dense water) convection / current (in water)	**B3**

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Question	Answer	Marks
7(a)	no fixed position	**B1**
	(average) distance between molecules is greater than that of solids and liquids	**B1**
	molecules move in any direction owtte at high speeds	**B1**
7(b)(i)	change of direction	**B1**
	minimum of two straight lines drawn	**B1**
7(b)(ii)	Brownian (movement)	**B1**

Question	Answer	Marks
8(a)	top box ticked C to F_1	**B1**
8(b)	Diagonal ray through F1 to lens then parallel to optical axis to I.	**B1**
	ray parallel to principal axis to lens then refracted through F_2 to I	**B1**
	both rays meet at arrowhead of image	**B1**
8(c)	(image) closer (to lens / F_2) owtte (image) smaller	**B1** **B1**

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Question	Answer	Marks
9(a)(i)	light travels faster than sound **OR** flash / light seen before bang heard	**B1**
9(a)(ii)	speed = distance ÷ time in any form	**C1**
	500 ÷ 1.6	**C1**
	312.5 (m / s)	**A1**
9(a)(iii)	it is windy owtte **OR** reaction times to start / stop watch	**B1**
9(b)	echo	**B1**
	(sound) reflected from cliffs	**B1**

Question	Answer	Marks
10(a)(i)	cell symbol correctly drawn	**B1**
10(a)(ii)	series	**B1**
10(a)(iii)	electrons	**B1**
10(b)(i)	any **two** from: (both) lamps have correct / full potential difference if one lamp fails the other lamp still lights lamps can be switched (on/off)independently	**B2**
10(b)(ii)	V = IR or (I =) V ÷ R	**C1**
	3 ÷ 12	**C1**
	0.25 (A)	**A1**

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Question	Answer	Marks
11(a)	3rd box ticked steel	**B1**
11(b)	place ends/poles together	**B1**
	repulsion (takes place)	**B1**
11(c)(i)	coil of wire	**B1**
	iron rod inside	**B1**
	coil connected to an (electrical) power supply OR current in coil	**B1**
11(c)(ii)	number of turns (in coil)	**B1**
	current (in coil)	**B1**

Question	Answer	Marks
12(a)(i)	nucleon number OR mass number	**B1**
12(a)(ii)	proton number OR atomic number	**B1**
12(b)(i)	selected count rate halved	**B1**
	two pairs of co-ordinates clearly indicated	**B1**
	(half-life =) 4 (minutes)	**B1**
12(b)(ii)	shallower curve drawn	**B1**

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