Cambridge International Examinations
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PHYSICS **0625/32**

Paper 3 Core Theory **October/November 2016**

MARK SCHEME

Maximum Mark: 80

Published

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Question	Answer	Marks
1(a)	<u>speed</u> **OR** <u>velocity</u> on y-axis **AND** time x-axis	**B1**
1(b)	A to B	**B1**
1(c)	area under graph	**C1**
	$0.5 \times 5 \times 5$ (+ (3×5))	**C1**
	27.5 (m)	**A1**
1(d)	correctly placed continuous single thin straight line from A to E drawn using a rule	**B1**
	Total:	**6**

Question	Answer	Marks
2(a)	1 <u>rule(r)</u> 2 balance	**B2**
2(b)	250 (cm^3)	**B1**
2(c)	D = M/V in any form	**C1**
	20/250	**C1**
	0.8 (g/cm^3)	**A1**
2(d)	freon, glycerol, sea water	**B2**
	Total:	**8**

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Question	Answer	Marks
3(a)	both boxes ticked	**B1**
3(b)	moment = force × distance in any form	**C1**
	300 × 1.4	**C1**
	420 (Nm)	**A1**
3(c)	clockwise moments = anticlockwise moments	**C1**
	W x 0.6 = candidates (b) **OR** *W* = candidates (b) / 0.6	**C1**
	700 (N)	**A1**
3(d)	child ‘s OR left side goes down **OR** adult side goes up **OR** right side goes up **OR** child’s moment is larger **OR** child’s turning force larger	**B1**
	Total:	**8**

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Question	Answer	Marks
4(a)	$W = m \times g$ in any form	C1
	400 (N)	A1
4(b)	pressure = force ÷ area in any form	C1
	400 **OR** candidates (a) ÷ 0.02	C1
	20 000 (N/m^2)	A1
4(c)	greater pressure **OR** wtte	B1
	(same force/weight acts on a) smaller area	B1
	Total:	7

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Question	Answer	Marks
5(a)	radiation	B1
5(b)	black can has bigger rise or higher temperature	B1
	silver reflects (radiant) heat (better) **OR** poor absorber of (radiant) heat	B1
	black is (a better) absorber of thermal energy	B1
5(c)	evaporation/evaporated	B1
	more energetic or higher energy molecules	B1
	overcome force of attraction	B1
	Total:	7

Question	Answer	Marks
6(a)	(angle of) reflection	B1
6(b)(i)	image 'I' correctly positioned	B1
6(b)(ii)	angle of reflection incorrect **OR** object and image are not same distance from mirror owtte	C1
	angle of incidence ≠ angle of reflection owtte	A1
	Total:	4

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Question	Answer	Marks
7(a)	speed = distance ÷ time in any form	C1
	indication of halving e.g. 450/2 **OR** 1500 × 0.15	C1
	225 (m)	A1
7(b)	more than 20 000 Hz	B1
7(c)	any wave from electromagnetic spectrum	B1
	Total:	5

Question	Answer	Mark
8(a)	30 ÷ 4	C1
	7.5 (cm)	A1
8(b)	number of waves (passing a point) in 1 second	B1
8(c)	f = 4/0.05	C1
	80	A1
	Hz	B1
	Total:	6

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Question	Answer	Marks
9(a)(i)	changes higher voltage to lower voltage owtte	**B1**
9(a)(ii)	<u>copper</u>	**B1**
9(a)(iii)	$V_s/V_p = N_s/N_p$ in any form $(12/240) \times 10\,000 \div 20$ 500	**C1** **C1** **A1**
9(b)	any two from: thinner wires or cables less heating or less energy or power wasted or more efficient lower current in cables fewer power stations needed transmit longer distances (without drop in power)	**B2**
	Total:	**7**

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Question	Answer	Marks
10(a)	heater clearly identified	**B1**
10(b)(i)	change current	**B1**
10(b)(ii)	change temperature of heater or output of heater	**B1**
10(c)	V = IR in any form or V ÷ I	**C1**
	250 ÷ 2	**C1**
	125(Ω)	**A1**
10(d)	fuse	**M1**
	(large) current melts fuse wire owtte	**A1**
	Total:	**8**

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Question	Answer	Marks
11(a)(i)	(current flow of charge in) one direction owtte	**B1**
11(a)(ii)	iron forms (temporary) magnet	**B1** **B1**
11(b)	Any three from: current in coil creates electromagnet owtte (electromagnet) attracts armature contacts (on 2nd circuit) close 2nd circuit complete	**B3**
11(c)	prevent overheating of cables owtte	**B1**
	Total:	**7**

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Question	Answer	Marks
12(a)	unstable atoms	**B1**
	random/spontaneous decay (of atoms)	**B1**
12(b)(i)	20 cpm = approx. 9000 **AND** 10 cpm = approx. 15 000	**B1**
12(b)(ii)	5000 – 6500	**B1**
12(c)	two half-life indicated	**B1**
	2.5 (g)	**B1**
12(d)	any sensible precaution: tongs/screening/lead apron minimise time exposure maximise distance between source and people restrict access to sources etc.	**B1**
	Total:	**7**

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