Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

PHYSICS **0625/31**

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

MARK SCHEME

Maximum Mark: 80

Published

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Question	Answer	Marks
1(a)	rule(r)	**B1**
	(stop) watch/clock	**B1**
1(b)(i)	x–axis labelled time/t with minutes	**B1**
	y-axis clearly labelled depth/distance/height with mm/cm/m	**B1**
1(b)(ii)	line drawn from the origin	**B1**
	single straight diagonal line	**B1**
1(c)	1000 mm = 1 m **OR** 2.5 ÷ 1000	**C1**
	0.0025 (m) **OR** 2.5×10^{-3}	**A1**
	Total:	**8**

Question	Answer	Marks
2(a)	35 m / s	**B1**
2(b)	area under line/graph	**C1**
	0.5 × 15 × 25	**C1**
	187.5 (m)	**A1**
2(c)	single straight line with steeper gradient than car A	**B1**
	horizontal line below 25 m / s	**B1**
	Total:	**6**

Question	Answer	Marks
3(a)	W = m × g **OR** 15 × 10	**C1**
	150 (N)	**A1**
3(b)(i)	turning effect (of a force)	**B1**
3(b)(ii)	moment = force × distance	**C1**
	425 × 2.5	**C1**
	1062.5 **OR** 1063	**A1**
	N m	**B1**
3(b)(iii)	(move rope/tyre) closer to trunk owtte	**B1**
	Total:	**8**

Question	Answer	Marks
4(a)	(gravitational) potential (energy)/(G)PE	**B1**
4(b)	any 3 from: water flows down **OR** water flows at constant speed water drives turbine **OR** turbine rotates owtte turbine turns generator (at constant speed) electricity generated/produced owtte	**B3**
4(c)	transferred to thermal **OR** sound	**B1**
	dissipated to the surroundings owtte	**B1**
4(d)	shorter (travelling) distance/water in B higher than A/water from A has to be pumped (up to C) owtte	**B1**
	Total:	**7**

Question	Answer	Marks
5(a)	friction	**B1**
5(b)(i)	total area = 3 × 4 = 12 (cm^2)	**C1**
	total weight = 525 + 75 N = 600(N)	**C1**
	P = F ÷ A in any form	**C1**
	600 ÷ 12	**C1**
	50 (N/cm^2)	**A1**
5(b)(ii)	less (surface) area (in contact with the ground) owtte	**B1**
	more pressure (results in more damage to the surface)	**B1**
	Total:	**8**

Question	Answer	Marks
6(a)	more regular/uniform arrangement/fixed position owtte	**B1**
	separation between atoms decreases/move closer/tightly packed	**B1**
	slower moving atoms/atoms vibrate (more slowly)	**B1**
6(b)	(water) molecules gain energy (from surroundings)	**B1**
	molecules escape from a liquid (surface)	**B1**
	evaporation	**B1**
	Total:	**6**

Question	Answer	Marks
7(a)	ultra violet/UV	**B1**
	X-rays	**B1**
7(b)	remote controller/burglar detection systems/grills/incubators/cable TV systems/thermal imaging/optical fibre communication	**B1**
7(c)	heats cells/tissue (inside the body)	**B1**
	Total:	**4**

Question	Answer	Marks
8(a)	78	**B1**
8(b)	(radiations that) remove electrons OR break molecules	**B1**
8(c)	pair of count-rate values used	**C1**
	clear indication of use of graph, expect two vertical lines or two clear indications on axes using their values	**C1**
	8 days (± 1 day)	**A1**
8(d)	2 half-lives	**C1**
	240 hours	**A1**
	Total:	**7**

Question	Answer	Marks
9(a)	light travels faster than sound or converse argument	**B1**
9(b)(i)	<u>echo</u>	**B1**
9(b)(ii)	amplitude – smaller	**B1**
	speed – the same	**B1**
9(c)	speed = distance ÷ time	**C1**
	170 + 170 **OR** 340 ÷ 1	**C1**
	340 (m / s)	**A1**
	Total:	**7**

Question	Answer	Marks
10(a)(i)	attraction/strong magnet pulling small magnet	**B1**
	the two magnets have opposite poles facing each other	**B1**
10(a)(ii)	drops/falls due **to** repulsion owtte	**B1**
10(b)(i)	magnet stroked along pin/stroked in same direction by magnet/pin stroked using same pole of magnet	**B1**
	procedure repeated/several times	**B1**
10(b)(ii)	use a known magnet	**B1**
	opposite poles attract **OR** like poles repel	**B1**
	Total:	**7**

Question	Answer	Marks
11(a)	thermal	**B1**
	lost to surroundings/air owtte	**B1**
11(b)(i)	ammeter	**B1**
11(b)(ii)	correct symbol for voltmeter	**B1**
	connected in parallel with the resistance wire	**B1**
11(b)(iii)	variable resistor	**B1**
	varies/changes current/resistance/voltage (in resistance wire)	**B1**
	Total:	**7**

Question	Answer	Marks
12(a)	coil of wire connected in series with (sensitive) ammeter	**B1**
	magnet moves relative to coil	**B1**
	meter indicates/measures (induced) current	**B1**
12(b)	Any two from:	**B2**
	speed of movement owtte	
	strength of magnet	
	number of coils/turns per metre	
	Total:	**5**