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

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the May/June 2017 series for most Cambridge IGCSE®, Cambridge International A and AS Level and Cambridge Pre-U components, and some Cambridge O Level components.

® IGCSE is a registered trademark.

This syllabus is approved for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

© UCLES 2017

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**

© UCLES 2017

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**

© UCLES 2017

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**

© UCLES 2017

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**

© UCLES 2017

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**

© UCLES 2017

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**

© UCLES 2017

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**

© UCLES 2017

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**

© UCLES 2017