



**Cambridge International Examinations**  
Cambridge International General Certificate of Secondary Education

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**PHYSICS**

**0625/32**

Paper 3 Core Theory

**October/November 2016**

MARK SCHEME

Maximum Mark: 80

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**Published**

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This document consists of **10** printed pages.

<b>Page 2</b>	<b>Mark Scheme</b>	<b>Syllabus</b>	<b>Paper</b>
	<b>Cambridge IGCSE – October/November 2016</b>	<b>0625</b>	<b>32</b>

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

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

<b>Page 3</b>	<b>Mark Scheme</b>	<b>Syllabus</b>	<b>Paper</b>
	<b>Cambridge IGCSE – October/November 2016</b>	<b>0625</b>	<b>32</b>

<b>Question</b>	<b>Answer</b>	<b>Marks</b>
3(a)	both boxes ticked	<b>B1</b>
3(b)	moment = force $\times$ distance in any form 300 $\times$ 1.4 420 (Nm)	<b>C1</b> <b>C1</b> <b>A1</b>
3(c)	clockwise moments = anticlockwise moments $W \times 0.6 = \text{candidates (b)}$ <b>OR</b> $W = \text{candidates (b)} / 0.6$ 700 (N)	<b>C1</b> <b>C1</b> <b>A1</b>
3(d)	child 's <b>OR</b> left side goes down <b>OR</b> adult side goes up <b>OR</b> right side goes up <b>OR</b> child's moment is larger <b>OR</b> child's turning force larger	<b>B1</b>
	<b>Total:</b>	<b>8</b>

<b>Page 4</b>	<b>Mark Scheme</b>	<b>Syllabus</b>	<b>Paper</b>
	<b>Cambridge IGCSE – October/November 2016</b>	<b>0625</b>	<b>32</b>

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

<b>Page 5</b>	<b>Mark Scheme</b>	<b>Syllabus</b>	<b>Paper</b>
	<b>Cambridge IGCSE – October/November 2016</b>	<b>0625</b>	<b>32</b>

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

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

<b>Page 6</b>	<b>Mark Scheme</b>	<b>Syllabus</b>	<b>Paper</b>
	<b>Cambridge IGCSE – October/November 2016</b>	<b>0625</b>	<b>32</b>

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

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

<b>Page 7</b>	<b>Mark Scheme</b>	<b>Syllabus</b>	<b>Paper</b>
	<b>Cambridge IGCSE – October/November 2016</b>	<b>0625</b>	<b>32</b>

<b>Question</b>	<b>Answer</b>	<b>Marks</b>
9(a)(i)	changes higher voltage to lower voltage owtte	<b>B1</b>
9(a)(ii)	<u>copper</u>	<b>B1</b>
9(a)(iii)	$V_s/V_p = N_s/N_p$ in any form  $(12/240) \times 10\,000 \div 20$  500	<b>C1</b>  <b>C1</b>  <b>A1</b>
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)	<b>B2</b>
	<b>Total:</b>	<b>7</b>

<b>Page 8</b>	<b>Mark Scheme</b>	<b>Syllabus</b>	<b>Paper</b>
	<b>Cambridge IGCSE – October/November 2016</b>	<b>0625</b>	<b>32</b>

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



<b>Page 9</b>	<b>Mark Scheme</b>	<b>Syllabus</b>	<b>Paper</b>
	<b>Cambridge IGCSE – October/November 2016</b>	<b>0625</b>	<b>32</b>

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

<b>Page 10</b>	<b>Mark Scheme</b>	<b>Syllabus</b>	<b>Paper</b>
	<b>Cambridge IGCSE – October/November 2016</b>	<b>0625</b>	<b>32</b>

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