



Cambridge IGCSE™

PHYSICS**0625/33**

Paper 3 Core Theory

May/June 2022**MARK SCHEME**

Maximum Mark: 80

Published

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This document consists of **13** printed pages.

Question	Answer	Marks
1(a)(i)	metre rule	B1
1(a)(ii)	50 (m)	B1
1(b)	graph starts at origin	B1
	speed = 0 at 9.0 s	B1
	highest speed at 17 s	B1
1(c)(i)	260 (s)	B1
1(c)(ii)	1.9 (m/s)	A3
	$500 \div 260$ OR $500 \div \text{(c)(i)}$	(C2)
	(speed =) distance $\div$ time in any form	(C1)

Question	Answer	Marks
2(a)(i)	electrical	B1
	(to) kinetic OR (gravitational) potential	B1
2(a)(ii)	(gravitational) potential	B1
2(b)(i)	same	B1
2(b)(ii)	any two from the following: energy transferred to surroundings thermal (energy) / heat lost work done against friction motor less than 100% efficient	B2

Question	Answer	Marks
2(b)(iii)	weight/force/mass AND height/distance moved	B1
	time	B1
2(c)	7900 OR 7870	A3
	$70 \div 0.0089$	(C2)
	(density =) mass $\div$ volume in any form	(C1)

Question	Answer	Marks
3(a)	any two from larger area lower pressure (on ground) does not sink in	B2
3(b)(i)	400	A3
	$4000 \div 10$ OR $4000 \div 9.8$	(C2)
	(mass =) weight $\div$ g OR weight $\div$ 10 weight $\div$ 9.8 in any form	(C1)
3(b)(ii)	500	A3
	$1000 \div 2.0$ OR $4000 \div (4 \times 2.0)$	(C2)
	(pressure =) force $\div$ area in any form	(C1)
	N/m ² OR Pa	B1

Question	Answer	Marks
4(a)	situation	B1
	explanation	B1
4(b)(i)	decreases	B1
4(b)(ii)	molecules slow(er)/less (kinetic) energy	B1
	hit (wall/flask) <u>less</u> often	B1
	hit (wall/flask) with <u>less</u> force	B1

Question	Answer	Marks
5(a)	thermometer	B1
5(b)(i)	radiation	B1
5(b)(ii)	conduction	B1
5(c)	(dull) black pipes	B1
	better absorber (of radiation)/less reflection from pipes	B1
	foil/shiny metal behind pipes	B1
	reflects (radiation back to pipes) owtte	B1
	valid alternatives	(B1)

Question	Answer	Marks
6(a)	normal(s)	B1
6(b)(i)	angle of incidence	B1
	that gives an angle of refraction of 90°	B1
6(b)(ii)	20° – emergent ray is refracted in air	B1
	40° – emergent ray is refracted in air AND greater refraction	B1
	60° – ray is reflected internally	B1

Question	Answer	Marks
7(a)(i)	infrared AND microwaves AND radio waves	B1
7(a)(ii)	radio waves	B1
7(a)(iii)	any two from: infrared microwaves radio waves	B1
7(a)(iv)	ultrasound	B1
7(b)	remote controls/heat lamps/heaters/thermal imaging/night vision/security cameras/heaters/grills/measuring blood	B1
	oxygen/pulse oximeters/measuring body temperature/thermal thermometer	B1

Question	Answer			Marks
7(c)	wave	transverse	longitudinal	B2
	infrared	✓		
	microwaves	✓		
	ultrasound		✓	
	radio waves	✓		

Question	Answer	Marks
8(a)(i)	400	A3
	$(N_s =) N_P \times V_S/V_P$ OR $8000 \times 12/240$	(C2)
	$V_P/V_S = N_P/N_S$ in any form	(C1)
8(a)(ii)	(step-down) transformer	B1
8(a)(iii)	copper	B1
8(b)	motor connected between A and B	B1
	2 lamps in series connected between A and B	A2
	2 lamps in series	(C1)

Question	Answer	Marks
9(a)	electromotive force/e. m. f./ potential difference/p. d./ voltage	B1

Question	Answer	Marks
9(b)(i)	electron(s)	B1
9(b)(ii)	ammeter	B1
9(c)(i)	0.4(0) (A)	A3
	$4(.0) \div 10$	(C2)
	$(I =) V \div R$ in any form	(C1)
9(c)(ii)	0.4(0) (A) OR same as (c)(i)	B1
9(c)(iii)	no change/same	M1
	resultant/total/combined resistance does not change	A1

Question	Answer	Marks
10(a)	alpha/ α	B1
	beta/ β	B1
	gamma/ γ	B1
10(b)(i)	35	B1
10(b)(ii)	17	B1
10(b)(iii)	18	B1
10(c)	<u>electrons</u>	B1