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PHYSICS **0625/32**

Paper 3 Core Theory **October/November 2017**

MARK SCHEME

Maximum Mark: 80

Published

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Question	Answer	Marks
1(a)	2nd line – advantage	**B1**
	3rd line – advantage	**B1**
	4th line – disadvantage	**B1**
1(b)	any three from: (cold) water is pumped into the ground warm rocks heat water / hot water turns to steam / water boils (steam) drives or turns or moves turbine (turbine) drives or turns or moves generator	**B3**

Question	Answer	Marks
2(a)	A – accelerates (from rest)	**B1**
	B – constant speed (of 2 m / s)	**B1**
	C – accelerates at faster rate / higher acceleration than previously	**B1**
	D – faster constant speed (of 10 m / s)	**B1**
2(b)	2 minutes = 120 s	**C1**
	area under the graph OR $d = s \times t$ OR 2 × 120	**C1**
	240 (m)	**A1**

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Question	Answer	Marks
3(a)(i)	$D = M / V$	**C1**
	450 / 145	**C1**
	3.1 (g / cm^3)	**A1**
3(a)(ii)	$W = m \times g$ in any form	**C1**
	0.45 × 10	**C1**
	4.5 (N)	**A1**
3(b)	$P = F / A$ in any form	**C1**
	30 / 80	**C1**
	0.375 (N / cm^2) OR 0.38 (N / cm^2)	**A1**

Question	Answer	Marks
4(a)	(gravitational) <u>potential</u> (energy)	**B1**
4(b)	arrow at the lowest point of swing	**B1**
4(c)	friction / air resistance / drag	**B1**
4(d)	any three from: cabin has kinetic energy two surfaces rub together / friction thermal energy generated / KE transferred to thermal dissipated to surroundings / air	**B3**

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Question	Answer	Marks
5(a)	insulator	**B1**
5(b)	Any five from: conduction / slow or limited transfer of thermal energy molecules move slower / lose kinetic energy convection stated as (drink cools) volume decreases density (of cooler drink) increases cooler water falls evaporation (of hot water) more energetic molecules escape / less energetic molecules remain	**B5**

Question	Answer	Marks
6(a)	normal correctly positioned	**B1**
6(a)(ii)	correct reflected ray at 45° to normal	**B1**
6(a)(iii)	*r* correctly indicated	**B1**
6(a)(iv)	angle *i* = angle *r*	**B1**
6(b)	parallel to the incident ray at P	**B1**
6(c)	F correctly labelled / 10 cm from lens	**B1**
	10 (cm)	**B1**

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Question	Answer	Marks
7(a)	green and indigo	**B1**
7(b)	radio and microwaves	**B1**
	infra-red	**B1**
7(c)	damages cells / heats cells	**B1**
7(d)	reduced exposure / leave room / move far away	**B1**
	metal apron / exposure badge / metal shielding	**B1**

Question	Answer	Marks
8(a)	1st row tick under orbiting the nucleus	**B1**
	2nd row tick under in the nucleus	**B1**
	3rd row tick under in the nucleus	**B1**
8(b)(i)	6	**B1**
8(b)(ii)	13	**B1**
8(c)(i)	same proton / atomic number	**B1**
	different nucleon number / number of neutrons / mass number	**B1**
8(c)(ii)	any acceptable isotope with proton number of 6	**B1**

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Question	Answer	Marks
9(a)(i)	steel	**B1**
9(b)(i)	variable resistor indicated	**B1**
9(b)(ii)	(steel) bar inside coil	**B1**
	switch closed OR current increased through coil	**B1**
	bar moved through coil (in same direction) OR current decreased and switch opened	**B1**
9(c)	at least one complete correct field line through and above coil	**B1**
	at least one complete correct field line through and below coil	**B1**

Question	Answer	Marks
10(a)(i)	25.6 (Ω)	**B1**
10(a)(ii)	$V = IR$ in any form	**C1**
	0.23 × 5.6	**C1**
	1.29 OR 1.3	**A1**
10(b)	resistance decreases	**B1**
	current increases	**B1**

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Question	Answer	Marks
11(a)	$N_1 / N_2 = V_1 / V_2$	**C1**
	(49 / 900) × 220 OR use of ratios seen	**C1**
	11.98 OR 12 (V)	**A1**
11(b)	copper	**B1**
11(c)	d.c. is in one direction only / a.c. changes direction	**B1**

Question	Answer	Marks
12(a)(i)	electric bell working owtte	**B1**
	no sound from bell / bell is quieter	**B1**
12(a)(ii)	any two from: sound will travel through air / glass sound will not cross a vacuum sound needs a medium to travel through	**B2**
12(a)(iii)	<u>vibrations</u>	**B1**
12(b)	20 Hz from first column	**B1**
	20 kHz from second column	**B1**

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