Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

PHYSICS **0625/33**

Paper 3 Core Theory **October/November 2019**

MARK SCHEME

Maximum Mark: 80

Published

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Question	Answer	Marks
1(a)	226.50 – 82.10 **OR** 3:46.5(0) – 1:22.1(0) **OR** 2 min 24.4 (s) 144.4(0) (s)	**C1** **A1**
1(b)	start stopwatch as LED lights owtte count large number of flashes i.e. > = 10 stop stopwatch on nth lighting of LED AND n > = 1 divide time on stopwatch by n	**B4**

Question	Answer	Marks
2(a)	speed = (total) distance ÷ time in any form 12 ÷ 1.5 8 (km / h)	**C1** **C1** **A1**
2(b)(i)	distance = area under graph **OR** area = ½ × base × height ½ × 3.0 × 4.0 6(.0) (m)	**C1** **C1** **A1**
2(b)(ii)	(between) 10(.0) and 12(.0) steepest section of graph / greatest gradient	**M1** **A1**
2(c)	W = mg in any form 72 × 10 720 (N)	**C1** **C1** **A1**

Question	Answer	Marks
3(a)(i)	8.0 (N) **AND** forwards / to the left	**B1**
3(a)(ii)	accelerating forwards / to the left	**B1** **B1**
3(b)	greater drag force / air resistance **OR** lower thrust owtte	**B1**

Question	Answer	Marks
4(a)(i)	(gravitational) potential energy	**B1**
4(a)(ii)	2nd (bag) as it has a greater load / force / weight (moved through same distance)	**B1**
4(a)(iii)	time (taken) (vertical) height (raised) / distance	**B1** **B1**
4(b)	B A E D C	**B3**

Question	Answer	Marks
5(a)	1. melting 2. boiling / evaporation 3. freezing / solidification	**B1** **B1** **B1**
5(b)	Any **three** from: (evaporation –) most energetic molecules escape from surface of liquid average KE of molecules remaining in liquid decreases temperature of liquid decreases energy transfers from water (on bench) to liquid (so water cools / freezes)	**B3**

Question	Answer	Marks
6(a)(i)	vertical arrow pointing down **AND** up	**B1**
6(a)(ii)	(10.0 ÷ 4 =) 2.5 (cm)	**B1**
6(a)(iii)	more waves / waves closer together / shorter wavelength	**B1**
6(b)(i)	light **AND** radio	**B1**
6(b)(ii)	sound **OR** ultrasound **OR** longitudinal	**B1**

Question	Answer	Marks
7(a)	(degrees) celsius **OR** ^{o}C volume	**B1** **B1**
7(b)	**Lower** 0 ^{o}C (water) freezes **OR** turns to ice **Upper** 100 ^{o}C (water) boils	 **B1** **B1** **B1** **B1**

Question	Answer	Marks
8(a)	normal	**B1**
8(b)	angle of incidence: N angle of reflection: S angle of refraction: P	**B1** **B1** **B1**
8(c)	refraction change in speed **OR** different refractive indices	**B1**

Question	Answer	Marks
9(a)(i)	either N and N **OR** S and S facing each other	**B1**
9(a)(ii)	repel / repulsion	**B1**
9(a)(iii)	attracted **OR** steel bar moves towards magnet A	**B1**
9(b)(i)	prediction: one end attracts **AND** the other end repels reason: like poles repel **OR** unlike poles attract	**B1** **B1**
9(b)(ii)	they attract (because) steel forms a permanent magnet owtte	**B1** **B1**
9(b)(iii)	sorting scrap metal **OR** doorbell **OR** relay **OR** (electric) motor **OR** circuit breakers	**B1**

Question	Answer	Marks
10(a)	thermistor	**B1**
10(b)(i)	2000 (Ω)	**B1**
10(b)(ii)	(I =) V ÷ R **OR** V = I × R in any form 12 ÷ 800 0.015 (A)	**C1** **C1** **A1**

Question	Answer	Marks
11(a)(i)	current is in one direction	**B1**
11(a)(ii)	symbols for two cells connected in series symbol for a switch	**B1** **B1**
11(b)(i)	motor	**B1**
11(b)(ii)	any **two** from: increasing number of turns on coil increasing the current (in the coil) increasing the strength of the magnetic field	**B2**

Question	Answer	Marks
12(a)(i)	same proton number **OR** same number of protons **OR** same atomic number **OR** same Z	**B1**
12(a)(ii)	different nucleon number **OR** different number of neutrons **OR** different mass number **OR** different A	**B1**
12(b)	alpha, beta and gamma **OR** symbols	**B2**
12(c)	top line: electrons – positive(ly) bottom line: electrons – negative(ly)	**B2** **B2**
12(d)	two half-lives indicated 2.0×10^{10} (atoms remain)	**C1** **A1**