Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

PHYSICS **0625/32**

Paper 3 Core Theory **May/June 2019**

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 International will not enter into discussions about these mark schemes.

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

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Generic Marking Principles

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptors for a question. Each question paper and mark scheme will also comply with these marking principles.

GENERIC MARKING PRINCIPLE 1:

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptors for the question
- the specific skills defined in the mark scheme or in the generic level descriptors for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

GENERIC MARKING PRINCIPLE 2:

Marks awarded are always **whole marks** (not half marks, or other fractions).

GENERIC MARKING PRINCIPLE 3:

Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

GENERIC MARKING PRINCIPLE 4:

Rules must be applied consistently e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

GENERIC MARKING PRINCIPLE 5: Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).
GENERIC MARKING PRINCIPLE 6: Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

Question	Answer	Marks
1(a)	A accelerating (uniformly) / speeding up	**B1**
	B steady/constant/uniform speed	**B1**
	C deceleration (non-uniform) / slowing down	**B1**
	D at rest / stopped/stationary / not moving	**B1**
1(b)	distance = area under graph OR area = ½ · base · height	**C1**
	0.5 · 3.5 · 5	**C1**
	8.75 (m)	**A1**

Question	Answer	Marks
2(a)	(678 – 318 =) 360 (g)	**B1**
2(b)(i)	160 (cm^3)	**B1**
2(b)(ii)	400 (cm^3)	**B1**
2(b)(iii)	D = m/v in any form	**C1**
	360 ÷ 400	**C1**
	0.9 (g/cm^3)	**A1**

Question	Answer	Marks
3(a)(i)	2.77 – 2.22 OR 0.55	**B1**
	1.1(0) (s)	**B1**
3(a)(ii)	any four from: (idea of) use of fiducial mark start watch as pendulum passes fiducial mark OR when pendulum released count large number (must be >=10) of swings stop watch as pendulum passes marker OR starting point divide total time by the number of swings timing to centre of swing	**B4**
3(b)	1 0.4(J)	**B1**
	2 0 or zero or no (J)	**B1**

Question	Answer	Marks
4(a)(i)	expand or increase in size/volume increase in pressure decrease in density	**B1**
4(a)(ii)	any 3 from: density (of air) is less molecules move faster/have more (kinetic) energy more collisions (per second) collisions with surface OR balloon (owtte) more force (in collisions) molecules move (further) apart	**B3**

Question	Answer	Marks
4(b)	P = F/A in any form	**C1**
	30 ÷ 12	**C1**
	2.5	**A1**
	N/cm^2	**B1**

Question	Answer	Marks
5(a)	F then H	**B1**
	G then E	**B1**
5(b)(i)	**1** 100 (W)	**B1**
	2 500 (W)	**B1**
5 (b)(ii)	less power OR energy used (by LED)	**B1**
	less CO_2 OR greenhouse gases OR global warming	**B1**

Question	Answer	Marks
6(a)(i)	normal	**B1**
6(a)(ii)	(angle of) incidence	**B1**
6(a)(iii)	double(s)	**B1**
6(b)(i)	principal focus	**B1**
6(b)(ii)	inverted diminished	**B2**

Question	Answer	Marks
7(a)	solid: molecules closely packed OR fixed positions OR can only vibrate	**B1**
	liquid: molecules loosely packed OR (more) random (arrangement)	**B1**
	gas: molecules widely spaced OR further apart than in liquid	**B1**
7(b)(i)	<u>evaporation</u>	**B1**
7(b)(ii)	Any 3 from: more energetic/faster molecules escape from the surface OR liquid (net/average) energy of remaining molecules is lower less (average) energy (gives) lower temperature molecules gain energy (from surroundings) speed of molecules increases	**B3**

Question	Answer	Marks
8(a)(i)	poles correctly labelled S N	**B1**
8 (a)(ii)	Any two from iron bar becomes induced magnet with S pole nearest to (N pole of) magnet opposite poles attract	**B2**
8(b)(i)	ends of coil connected to power supply OR battery OR cell	**B1**
8(b)(ii)	can be switched on/off OR magnetised/demagnetised (easily)	**B1**

Question	Answer	Marks
9(a)	(rule) rubbed with a cloth owtte	**B1**
	electrons or negative charges move	**B1**
	on to the cloth OR from / off the ruler	**B1**
9(b)(i)	positive	**B1**
9(b)(ii)	same charges repel	**B1**

Question	Answer	Marks
10(a)	ammeter symbol	**B1**
	ammeter in series (with power supply)	**B1**
	voltmeter symbol	**B1**
	voltmeter in parallel (with lamps/power supply)	**B1**
	two lamps in parallel	**B1**
10(b)	(brightness) stays the same	**B1**
	current (in working lamp) stays the same	**B1**

Question	Answer	Marks
11(a)	step-down (transformer)	**B1**
11(b)	(soft) iron	**B1**
	forms a temporary magnet	**B1**
11(c)(i)	$V_p/V_s = N_p/N_s$ **OR** ratio used	**C1**
	240 · (125 ÷ 5000)	**C1**
	(PQ =) 6 (V)	**A1**
11(c)(ii)	(PR =) 12 (V) / double the value in **(c)(i)** (PQ)	**B1**
	twice as many turns between P and R (as P and Q)	**B1**

Question	Answer	Marks
12(a)(i)	unpredictable owtte	**B1**
12(b)	From top to bottom of table alpha: HIGH LOW	**B1**
	beta: MEDIUM MEDIUM	**B1**
	gamma: LOW HIGH	**B1**
12(c)	protons	**B1**
	neutrons	**B1**
	2 of each drawn/labelled AND no electrons	**B1**