Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

PHYSICS **0625/32**

Paper 3 Core Theory **March 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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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.

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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.

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Question	Answer	Marks
1(a)	top box ticked: density	**B1**
1(b)	2500 (g)	**B1**
1(c)	W = mg in any form	**C1**
	(2.5 + 1.0 + 0.5) = 4	**C1**
	40	**A1**
	N or newtons	**B1**

Question	Answer	Marks
2(a)	line starts from 0 on y-axis straight diagonal line to 10 m / s line parallel to time axis straight diagonal line to x-axis at greater time (from horizontal section) line drawn to time axis at (85, 0)	**B5**
2(b)	speed = distance ÷ time in any form OR (distance =) speed × time	**C1**
	7.5 × 150	**C1**
	1125 (m)	**A1**

Question	Answer	Marks
3(a)(i)	gravity **OR** weight	**B1**
3(a)(ii)	4.0 (N)	**B1**

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Question	Answer	Marks
3(b)	4.8 (N)	**B1**
	Up(wards)	**B1**
3(c)(i)	energy cannot be created or destroyed (but can be transformed)	**B1**
3(c)(ii)	PE / KE / elastic energy of load / spring decreases / is transformed	**B1**
	Any one from: to thermal energy (which is) dissipated (to surroundings)	**B1**

Question	Answer	Marks
4(a)(i)	tick in top two boxes: distance **AND** force	**B1**
4(a)(ii)	first word circled: joule	**B1**
4(b)	tick in top AND bottom boxes: energy transferred **AND** time	**B1**
4(c)	clockwise moment = anticlockwise moment	**C1**
	$1.5 \times 30\,000 = 1 \times$ (load)	**C1**
	(load =) 45 000 (N)	**A1**
4(d)(i)	centre of mass in centre of load	**B1**
4(d)(ii)	centre of mass (moves) closer to pivot (point)	**B1**

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Question	Answer	Marks
5(a)	sun(light)	**B1**
	electrical	**B1**
5(b)(i)	Any two from: uses a renewable source of energy no cost for source of energy no polluting / greenhouse gases OR no carbon dioxide produced easy to erect and dismantle conserves fossil fuels	**B2**
5(b)(ii)	Any ONE from: does not work at night need large area of land (for sufficient output)	**B1**
5(c)	idea that (panel can) follow the sun as it moves across the sky OR will absorb more energy OR transfer energy / work more efficiently	**B1**

Question	Answer	Marks
6(a)(i)	arrow upwards from heating element	**B1**
	arrow across top **OR** down on opposite side	**B1**
6(a)(ii)	warm air expands	**B1**
	(air) becomes less dense	**B1**
	(air) rises	**B1**
6(a)(iii)	radiation	**B1**
6(b)	on ceiling	**B1**

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Question	Answer	Marks
7	change in direction of light when entering a medium – refraction very high frequency sounds – ultrasound a glass prism producing a spectrum – dispersion light spreading after passing through a narrow gap – diffraction sound reflecting from a wall – echo	**B5**

Question	Answer	Marks
8(a)	In order from left to right: γ / gamma (rays) X-rays infrared (rays / waves) microwaves	**B4**
8(b)	sun beds **OR** security marking	**B1**

Question	Answer	Marks
9(a)	(Fig. 9.1 is a) parallel (circuit)	**B1**
	(Fig. 9.2 is a) series (circuit)	**B1**
9(b)	Any two from: lamps less bright if one lamp breaks the other does not light lamps cannot be switched independently	**B2**
9(c)	two correct switch symbols	**B1**
	switch on each branch	**B1**

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Question	Answer	Marks
9(d)	(K W) on	**B1**
	(J W) off	**B1**
	(J Z) on	**B1**

Question	Answer	Marks
10(a)	clamp **AND** nail to conductor **AND** stirrup **AND** thread to insulator	**B1**
10(b)	rubbed with a cloth	**B1**
	electrons transfer to polythene / from cloth	**B1**
10(c)	(bring) a negatively charged rod / strip / object near	**B1**
	repulsion	**B1**

Question	Answer	Marks
11(a)	T P (S) R Q	**B3**
11(b)	(soft) iron	**B1**
	(forms a) <u>temporary</u> magnet	**B1**

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Question	Answer	Marks
12(a)	(neutron) – 125 – neutral	**B2**
	proton(s) – 85 – (positive)	**B2**
12(b)(i)	curve of negative gradient, gradient decreasing	**B1**
	curve with negative gradient starts on y axis	**B1**
12(b)(ii)	0.125 (kg) (remaining)	**C1**
	two half-lives indicated	**C1**
	16 hours	**A1**

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