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CAMBRIDGE
International Education

Cambridge IGCSE™

PHYSICS **0625/31**

Paper 3 Core Theory **October/November 2025**

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.

Cambridge International is publishing the mark schemes for the October/November 2025 series for most Cambridge IGCSE, Cambridge International A and AS Level components, and some Cambridge O Level components.

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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 descriptions 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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Annotations guidance for centres

Examiners use a system of annotations as a shorthand for communicating their marking decisions to one another. Examiners are trained during the standardisation process on how and when to use annotations. The purpose of annotations is to inform the standardisation and monitoring processes and guide the supervising examiners when they are checking the work of examiners within their team. The meaning of annotations and how they are used is specific to each component and is understood by all examiners who mark the component.

We publish annotations in our mark schemes to help centres understand the annotations they may see on copies of scripts. Note that there may not be a direct correlation between the number of annotations on a script and the mark awarded. Similarly, the use of an annotation may not be an indication of the quality of the response.

The annotations listed below were available to examiners marking this component in this series.

Annotations

Annotation	Meaning
	correct point or mark awarded
	incorrect point or mark not awarded
^	information missing or insufficient for credit
A	allow or accept
AE	arithmetic error
I	incorrect or insufficient point ignored while marking the rest of the response
CON	contradiction in response, mark not awarded
BOD	benefit of the doubt given
ECF	error carried forward applied
NAQ	response has not answered question

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Annotation	Meaning
RE	rounding error
SEEN	point has been noted, but no credit has been given or blank page seen
SF	error in number of significant figures
TE	transcription error
TV	response is too vague or there is insufficient detail in response
T	answer outside the tolerance of the mark scheme
	used to highlight parts of an extended response
	used to highlight parts of an extended response
MO	mandatory mark not awarded
SC	special case

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M3. Acronyms and shorthand in the mark scheme.

acronym/shorthand	**explanation**
A mark	Final answer mark which is awarded for fully correct final answers including the unit.
C mark	Compensatory mark which may be scored when the final answer (A) mark for a question has not been awarded.
B mark	Independent mark which does not depend on any other mark.
M mark	Method mark which must be scored before any subsequent final answer (A) mark can be scored.
Brackets ( )	Words not explicitly needed in an answer, however if a contradictory word/phrase/unit to that in the brackets is seen the mark is not awarded.
Underlining	The underlined word (or a synonym) must be present for the mark to be scored. If the word is a technical scientific term, the word must be there.
/ or **OR**	Alternative answers any one of which gains the credit for that mark.
owtte	Or words to that effect.
ignore	Indicates either an incorrect or irrelevant point which may be disregarded, i.e., not treated as contradictory.
insufficient	an answer not worthy of credit on its own.
CON	An incorrect point which contradicts any correct point and means the mark cannot be scored.
ecf [question part]	Indicates that a candidate using an erroneous value from the stated question part must be given credit here if the erroneous value is used correctly here.
cao	correct answer only

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M4. Miscellaneous

Equations and formulae.

- Where a C, B or M mark is available for quoting a formula or equation this can be done in any form and in words, symbols or numbers unless the mark scheme specifies otherwise.
- Where a C mark is available for quoting an equation and another C mark is available for rearranging and/or substituting numbers into an equation, a candidate who only writes down the equation in the rearranged (and/or numerical) form in one step gains both C marks.

Use of ecf. The mark scheme notes where ecf is applicable, in the guidance section of the final answer mark. However, it should be applied for all relevant C marks as well. **Always annotate ecf if applied.** See Science specific Marking point 4 above.

Units.

On paper the 3 the unit is usually given on the answer line. Please ignore any unit given by the candidate in their working or final answer.

Significant Figures.

- Unless otherwise indicated in the mark scheme final answers expressed to two or more significant figures receive the final answer (**A)** mark if the candidate's answer rounds to the mark scheme answer.
- A final answer expressed to one significant figure is only awarded the final answer (**A)** mark where the final answer is exact to one sig. fig. (This applies to all answers, including answers using ecf.)
- A correct numerical answer, quoted with fewer significant figures than required by the mark scheme (even if in the working it has the required number of significant figures), is not awarded the final answer (**A**) marks. **C** (B or M) marks are awarded as appropriate.

Arithmetic errors and Transcription errors. Where a (probable) transcription error or arithmetic error is identified in working, ignore the error when awarding C marks.

Fractions. An answer expressed as a fraction is not a numerically correct final answer unless the fraction is explicitly stated in the mark scheme.

Crossed out work. When only part of an answer is crossed out the crossed-out work must be ignored. However, work which has been **wholly** crossed out and **not replaced** and can easily be read, should be marked as if it had not been crossed out**.** Look to see if it has been replaced on a blank page or another part of the same page before attempting to mark the crossed-out work.

Marking diagrams on-screen. Differences in magnification and/or individual computer screen settings can alter the appearance of diagrams. If it is necessary to check line lengths or angles use the ruler and protractor tools provided within RM Assessor 3 to ensure consistency across all examiners.

NR. (# or / key on the keyboard). Use this (instead of giving 0 marks) if the answer space for a question is completely blank or contains no readable words, figures or symbols.

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Question	Answer	Marks
1(a)	(speed =) 10 (m/s)	**A3**
	(speed =) 100 ÷ 10	(C2)
	(speed =) gradient of line (between 0 and 10 s)	(C1)
1(b)(i)	constant speed OR steady speed OR uniform speed	**B1**
1(b)(ii)	stationary OR stopped	**B1**

Question	Answer	Marks
2(a)(i)	20 (cm^3)	**B1**
2(a)(ii)	(volume of one drop =) 0.20 (cm^3)	**A3**
	(volume of one drop =) 24 ÷ 120	(C2)
	(volume of one drop =) volume of water ÷ number of drops	(C1)
2(b)	(density of plastic is) less OR lower (than water)	**B1**
	(because) plastic/it floats (on water)	**B1**

Question	Answer	Marks
3(a)	2.5 (N)	**A2**
	(weight =) mass (in kg) × g OR (weight =) 0.25 × 9.8	(C1)

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Question	Answer	Marks
3(b)(i)	(length of spring =) 48.5 (cm)	**A2**
	line from 7.0 on x-axis to line on graph OR line from graph to about 48.5 on y-axis	(C1)
(b)(ii)	(length of spring =) 33.5 (cm)	**A2**
	graph line extended in straight line to meet y-axis	(C1)

Question	Answer	Marks
4(a)(i)	240 (J)	**A3**
	(work done =) 600 × 0.4(0)	(C2)
	(work done =) force × distance (moved in the direction of the force)	(C1)
4(a)(ii)	any **TWO** from: (energy is transferred to) kinetic energy (store) gravitational potential energy (store) thermal/internal energy (store)	**B2**
4(b)	120 (W)	**A3**
	(energy transferred =) 3600 ÷ 30	(C2)
	(power =) energy transferred ÷ time (taken to do work)	(C1)

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Question	Answer	Marks
5(a)	(particles are;) fixed in position/ in lattice/regular pattern	**B1**
	(can only) vibrate / no translational KE	**B1**
	close(r than in liquids or gases)	**B1**
5(b)	any **THREE** from: (particles/they) move at high speed OR have high/large KE move randomly (particles/they) collide with it/surface/walls (collisions) create a force (on cylinder wall) idea of $P = F / A$	**B3**
5(c)	(P =) 1.4 (N/cm^2)	**A3**
	(P =) 420 ÷ 300	(C2)
	(P =) $F \div A$	(C1)

Question	Answer	Marks
6(a)(i)	(1) ultraviolet (light/rays)	**B1**
	(2) X-rays	**B1**
6(a)(ii)	sterilising (food or medical dressings/equipment) OR detection/treatment of cancer OR (gamma) imaging OR tracing detection of (underground) leaking pipes/(metal) cracks owtte	**B1**
6(a)(iii)	mutation of cells/DNA OR damage to cells/DNA	**B1**

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Question	Answer	Marks
6(b)	(λ =) 1.4 × 10^2 (m)	**A3**
	(λ =) 2.8 (× 10^8) ÷ 2.0 (× 10^6)	(C2)
	$v = f \times \lambda$ OR (λ =) $v \div f$	(C1)

Question	Answer	Marks
7(a)	(pair 1) attractive force (pair 2) attractive force (pair 3) no force	**B2**
7(b)	region/area in which a magnet(ic pole) experiences a force OR region/area in which a magnetic material experiences a force	**B1**
7(c)(i)	name of an electrically conducting material	**B1**
	name of an electrically insulating material	**B1**
7(c)(ii)	idea (they have) electrons/charges/ions	**M1**
	(that) can move (from ion to ion OR freely in conducting materials)	**A1**

Question	Answer	Marks
8(a)	3000 (Ω)	**A3**
	72 / 0.024	(C2)
	$V = IR$ OR (R =)V / I	(C1)

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Question	Answer	Marks
8(b)	(output voltage V_s =) 15 (V)	**A3**
	V_s / 120 = 70 / 560 OR (V_s =) (70 / 560) × 120	(C2)
	V_s / V_p = N_s / N_p in any form	(C1)
8(c)	(power =) 0.14 (W)	**A4**
	(power =) $2.2 \times 10^{-3} \times 64$	(C3)
	(power =) $I \times V$	(C1)
	2.2 (mA) = 0. 0022 (A) OR 2.2 x 10^{-3} (A)	(C1)
8(d)	30 (cents)	**A3**
	(cost =) 0.14 × 6(.0) × 36 OR 0.84 × 36 OR 0.14 × 216 OR 5.04 × 6	(C2)
	(cost =) (energy in) kW h × (number of) hours × cost (of one unit)	(C1)

Question	Answer	Marks
9(a)	**condone** serial	
9(b)	16 (Ω)	**A2**
	(combined resistance =) R_1 + R_2 OR 8(.0) + 8(.0)	(C1)
9(c)	symbol for switch seen	**B1**
	symbol for cell seen	**B1**
	symbols connected to give series circuit	**B1**

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Question	Answer	Marks
10(a)	$^{223}_{88}Ra$	B1 B1
10(b)	(number of neutrons = 223 – 88 =) 135	B1
10(c)	(3 × 11 =) 33 (days)	A3
	(change in mass takes place over / decay takes) 3 half-lives	(C2)
	32 16 8(.0) 4(.0) OR 32 × ½ × ½ × ½ OR 32 × 1/8	(C1)

Question	Answer	Marks
11(a)	Earth has greater mass ORA	B1
11(b)	(1) Jupiter (2) Saturn (3) Uranus (4) Neptune	B3
11(c)	430 (s)	A3
	$1.3 \times (10^{11}) \div 3(.0) \times (10^{8})$	(C2)
	speed = distance ÷ time OR (t =) $d \div s$	(C1)

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