CAMBRIDGE
International Education

Cambridge IGCSE™

PHYSICS **0625/42**

Paper 4 Extended Theory **February/March 2026**

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.

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Cambridge International is publishing the mark schemes for the February/March 2026 series for most Cambridge IGCSE, Cambridge International A and AS Level components, and some Cambridge O Level components.

 [Turn over

Question	Answer	Marks
1(a)	1.7 (km)	**B1**
1(b)	B	**B1**
	C **OR** D	**B1**
1(c)	20 (km / h) **OR** maximum speed, correctly calculated from the gradient of BC using values other than point B and point C.	**A3**
	(speed =) gradient (of distance-time graph) **OR** triangle method for gradient shown on graph **OR** (Speed =) {1.25 – 0.4 ÷ {7.5 – 5.0}} **OR** (Speed =) 0.85 / 2.5 **OR** 0.34	C1
	conversion from km / min to km / h **OR** conversion from min to h	C1

Question	Answer	Marks
2(a)(i)	$\rho = m / V$ **OR** density equals mass divided by volume	**B1**
2(a)(ii)	0.014 (m^3)	**B1**
2(a)(iii)	*Any one from:* • steel is denser (than sea water) • density (sea) water < density of steel • 1030 (kg / m^3) < 7900 (kg / m^3) • it has higher density (than sea water)	**B1**

Question	Answer	Marks
2(a)(iv)	*Any one from:* • ship is not solid (steel) • the volume of the ship includes air • air is (a lot) less dense than (sea) water • air reduces density of the ship	**B1**
	Any one from: • density of the ship < density of (sea) water • it is less dense than (sea) water • average density (of steel + air) < density of (sea) water	**B1**
2(b)(i)	2.6×10^7 (N)	**A2**
	(*F*=) *ma* **OR** (F=) $3.5 \times 10^7 \times 0.75$	C1
2(b)(ii)	Any two from: • (there is a) resistive force **OR** named resistive force • (resistive) force acts on the ship **OR** force opposes (the engine) • force in **(b)(i)** is the resultant force **OR** resultant force is less (than the force from the engine)	**B2**

Question	Answer	Marks
3(a)(i)	5800 (N)	**B1**
3(a)(ii)	5200 (Pa)	**A2**
	(*P*=) *F* / *A* **OR** 5800 ÷ 1.12	C1
3(a)(iii)	7(.0) **AND** 56	**B1**
	8(.0)	**B1**

Question	Answer	Marks
3(b)	25 000 (Pa) **OR** 2.5×10^4 (Pa)	**A2**
	$(\Delta) = \rho g(\Delta)h$ **OR** $(\Delta p =)$ $1030 \times 9.8 \times 2.50$	C1

Question	Answer	Marks
4(a)	radiation	**B1**
4(b)(i)	thermal **OR** internal	**B1**
	(a word meaning) absorbed **OR** gained **OR** taken in (a word meaning) emitted **OR** lost **OR** released	**B1**
4(b)(ii)	(thermal) energy absorbed (by the table) decreases **OR** (rate of) emission from table is greater than (rate of) absorption (by table)	**B1**
	(because) white is a good reflector of radiation **OR** (because) white is a poor absorber of radiation	**B1**
4(c)	7.5 (kWh)	**A 2**
	$(E =) Pt$ **OR** $(E =)$ 2.5×3	C1

Question	Answer	Marks
5(a)	0.39 (m^3)	**A3**
	PV= constant	C1
	$(V =) \{1.02 \times 1(.0) \times 10^5\} \div 2.6 \times 10^5$ **OR** $(V =)$ 3.9×10^N	C1

Question	Answer	Marks
5(b)(i)	(separation) large **OR** (particles) far apart	**B1**
	(arrangement) irregular **OR** random	**B1**
	(motion) rapid **OR** random (directions)	**B1**
5(b)(ii)	average kinetic energy (KE) of particles decreases	**A2**
	kinetic energy (KE) of particles decreases	C1

Question	Answer	Marks
6(a)(i)	principal axis	**B1**
6(a)(ii)	ray parallel to principal axis between tip of *O* or *I* and lens **AND** ray from intersection of this ray with centre of lens to the tip of *I* or *O*	**B1**
	1.8 (cm)	**B1**
6(a)(iii)	real	**B1**
	same size	**B1**
6(b)(i)	X between *F* and the lens.	**B1**
6(b)(ii)	on the opposite side of the lens to the object: on the same side of the lens as the object: ✓ the same distance from the lens as the object: closer to the lens than the object: further away from the lens than the object: ✓	**B1**

Question	Answer	Marks
7(a)	4.5	**B1**
	V	**B1**
7(b)	charge **AND** time	**B1**
7(c)	1500 (Ω)	**A3**
	(R =) V ÷ I **OR** (R =) 9(.0) ÷ 4.6×10^{-3} **OR** (V_R =) $4.6 \times 10^{-3} \times 480$	C1
	(resistance of thermistor =) total resistance – 480 **OR** (share of e.m.f. for thermistor =) 9(.0) – 2.2 **OR** (R =) {9 – {$4.6 \times 10^{-3} \times 480$}} ÷ 4.6×10^{-3}	C1
7(d)	(voltmeter) unchanged **AND** (ammeter) decreases	**B1**

Question	Answer	Marks
8(a)(i)	33 000 (V) **OR** 3.3×10^4 (V)	**A2**
	(V_p =) $N_p V_{s/}$ ÷ N_s **OR** (V_p=) {6200 × 230} ÷ 43	C1
8(a)(ii)	0.067 (A) **OR** 0.066 (A)	**A3**
	(I_p =) $I_s V_s$ ÷ V_p **OR** (I_p =) 2200 ÷ 33 000	C1
	(conversion 2.2 kW to) 2200 (W) **OR** (I_p =) 6.6×10^N **OR** (I_p =) 6.7×10^N	C1
8(b)(i)	$P = I^2R$	**B1**

Question	Answer	Marks
8(b)(ii)	high voltage reduces current (for same power) **OR** high voltage means low current (for same power)	**B1**
	(electrical) power (output) is the same (with lower current) **OR** (low current gives) less heating effect ORA	**B1**

Question	Answer	Marks
9(a)	path labelled γ undeviated through the electric field	**B1**
	path labelled α is a curve towards negative plate **AND** deflects when it enters the space between the plates	**A2**
	path labelled α is a straight line towards negative plate **AND** deflects when it enters the space between the plates	**C1**
	path labelled α continues horizontal between the plates and then curves towards negative plate	C1
9(b)	(α-particles' path is) stopped (by paper) **OR** α-particles don't pass through (electric field)	**B1**
	(γ-radiation path) is unchanged	**B1**
9(c)	(statement) β-particles deflected (towards positive plate) **OR** (path) curves (upwards)	**B1**
	(explanation: β-particles) are (negatively) charged	**B1**
	charged particles in an electric field experience a force owtte	**B1**

Question	Answer	Marks
10(a)(i)	red giant	**B1**
10(a)(ii)	white dwarf (star)	**B1**

Question	Answer	Marks
10(b)(i)	blue light has a shorter wavelength (than red light) **OR** it has a shorter wavelength **ORA**	**B1**
10(b)(ii)	6.0×10^{14} (Hz)	**A2**
	(f =) c / λ **OR** (f =) $3.0 \times 10^{8} \div 5.0 \times 10^{-7}$	C1

Question	Answer	Marks
11(a)	(r is) radius of orbit (of the object)	**B1**
	(T is) orbital period **OR** time taken to (complete one) orbit (around the Sun)	**B1**
11(b)(i)	*Any two from:* • orbit is not (exactly) circular **OR** orbit is (only) approximately circular • r is an average value • r varies **OR** distance from the Sun varies • **A** Sun's gravitational pull varies	**B2**
11(b)(ii)	(T_{Saturn} =) 9.16×10^{8} (s) **OR** (T_{Saturn} =) $(2\pi \ x \ 1.4 \ x \ 10^{12}) / (9600)$	**A2**
	(T =)$2\pi r / v$	C1
	(T_{Earth} =) 3.15×10^{7} (s) **OR** (T_{earth} =) $365 \times 24 \times 60 \times 60$ (s)	**B1**
	((T_{saturn} =) 29 (Earth) years	**B1**

Paper 6

Cambridge Assessment International Education

Cambridge IGCSE™

PHYSICS **0625/06**

Paper 6 Alternative to Practical **For examination from 2023**

MARK SCHEME

Maximum Mark: 40

Specimen

This document has **10** pages. Any blank pages are indicated.

Question	Answer	Marks
1(a)	21(.0) (°C)	**1**
1(b)	s, °C, °C all correct	**1**
	30, 60, 90, 120, 150, 180	**1**
1(c)	appropriate precaution, e.g. avoidance of parallax (only if explained) / wait until reading stops rising (at start)	**1**
1(d)(i)	beaker with lid **A** (has a greater rate of cooling)	**1**
	correct mention of comparative temperature change <u>over 0 to 180 s</u>	**1**
1(d)(ii)	any suitable change to <u>apparatus</u> relating to comparison, e.g. insulate sides / stand on mat use plastic beaker thicker lid use of fan use wider beaker	**1**
	matching valid explanation, e.g. thermal energy only escapes from surface less transfer of thermal energy by sides / bottom less conduction through lid larger surface area (for evaporation to occur)	**1**
1(e)	straight line	**1**
	through the origin	**1**
1(f)	any appropriate factor, e.g. volume of water initial temperature of water (same) lids type / material / size of beaker room temperature / appropriate environmental factor	**1**

Question	Answer	Marks
2(a)(i)	correct voltmeter symbol in parallel with **P** and **Q**	**1**
2(a)(ii)	V = 2.6 (V)	**1**
	I = 0.36 (A)	**1**
2(b)	correct units: V, A	**1**
2(c)(i)	correct calculations of R: $\frac{7.2}{\textbf{e.c.f.}}$, 5.1, 3.1 (Ω)	**1**
	consistent 2 or consistent 3 **s.f.**	**1**
2(c)(ii)	correct calculations of $\frac{R}{l}$: $\frac{0.080}{\textbf{e.c.f.}}$, 0.085, 0.078	**1**
2(d)	statement matching results <u>with</u> values quoted **AND** matching justification (e.g. 'within the limits of experimental accuracy')	**1**
2(e)	any **one** from: difficult to judge position of crocodile clip difficult to measure wire to nearest mm contact between wire and crocodile clip not precise difficult to interpolate readings on meters between graduations	**1**
2(f)(i)	in series between power supply and either voltmeter terminal	**1**
2(f)(ii)	correct symbol for variable resistor (rectangle with strike-through arrow only)	**1**

Question	Answer	Marks
3(a)	h_O = 1.4 (cm)	**1**
3(b)	h_I present (EXPECT 4.5 cm) **AND** M calculation correct (EXPECT $\frac{0.31}{\textbf{e.c.f.}}$ from h_O and h_I)	**1**
	M to 2 **s.f. NOT** use of recurring symbol	**1**
3(c)	axes with correct orientation, both labelled with quantity and unit	**1**
	appropriate scales (plots occupying at least ½ grid)	**1**
	plots all correct to ½ small square and precise plots	**1**
	well-judged line and thin line	**1**
3(d)	G in range 15.0 to 17.0	**1**
	triangle method seen on graph occupying at least half of line	**1**
3(e)	any inherent difficulty, e.g. hand / ruler in way of image **OR** some images too small to measure accurately	**1**
	matching improvement to <u>apparatus</u>, e.g. use translucent screen and view from behind **OR** fix ruler / grid to screen **OR** mark extremities of image and measure later **OR** use larger object	**1**

Question	Answer	Marks
4	MP1 **factor:** clear statement of appropriate variable to test, e.g. mass of ball	**1**
	MP2 **control variable:** named variable which should be kept constant, e.g. height of drop, depth of sand	**1**
	MP3 **apparatus:** metre rule and any apparatus essential to variable under test, e.g. balance	**1**
	MP4 **method:** measure factor under test **AND** drop ball **AND** measure diameter / depth of depression	**1**
	MP5 repeat for new value of variable under test	**1**
	MP6 **additional point:** repeat experiment or each value of factor **AND** average / means of measuring depth / diameter of crater accurately / apparatus for measuring diameter of ball accurately / measure diameter of ball / crater in different places (and take mean) / smooth / flatten sand surface / at least 5 sets of data taken / reliable means of releasing ball / sensible values for factor quoted	**1**
	MP7 **graph:** diameter / depth of depression vs appropriate <u>continuous</u> variable (**NOT** 'size' of ball without qualification)	**1**