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CAMBRIDGE
International Education

Cambridge IGCSE™

CHEMISTRY **0620/33**

Paper 3 Theory (Core) **May/June 2026**

MARK SCHEME

Maximum Mark: 80

Published

This mark scheme contains the instructions and marking guidance that our examiners used to mark candidate responses for this component.

Before they start marking, examiners complete a standardisation process. They review a range of candidate responses and discuss the mark scheme in detail to agree which answers can and cannot be accepted. Examiners award marks where it is clear that candidate responses have met the requirements of the mark scheme. These requirements may vary between different components or different versions of the same component, depending on the exact requirements of the question and the candidate responses seen during the standardisation process.

Sometimes, our mark schemes may allow marks to be awarded to responses which contain elements that are factually incorrect or for content not covered by the syllabus. We do this in response to the demands of a specific question to support candidates and make sure that our assessments are fair. However, these allowances should not be used as a guide for teaching and learning.

We cannot discuss the mark scheme with schools, and we recommend that schools read the mark scheme together with the assessment material and the Principal Examiner Report for Teachers.

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General marking principles

All examiners must apply these marking principles when marking candidate responses.

1	Examiners must award marks for each response in line with: • the specific **content** defined in the mark scheme • the specific **skills** defined in the mark scheme or in the level descriptions • the **standard of response** required as exemplified by the standardisation scripts.
2	Examiners must award **whole marks** (not half marks, or other fractions).
3	Examiners must award marks **positively**. This means that: • marks are not deducted for errors or omissions • marks are awarded for correct/valid answers as defined in the mark scheme and also for **other valid answers** which go beyond the scope of the syllabus and mark scheme referring to your team leader as appropriate • the quality of spelling, punctuation and grammar are judged **only** when the mark scheme indicates that these features are **specifically assessed** in the question. However, the meaning of all responses must be unambiguous.
4	Examiners must **consistently** apply the requirements of the mark scheme and any rules for what to do when candidates have not followed instructions correctly.
5	Examiners must use the **full range of marks** defined in the mark scheme, unless limited by the quality of the candidate responses seen.
6	Examiners must award marks according to the mark scheme and **must not** award marks with grade thresholds or grade descriptions in mind.

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Science-Specific Marking Principles

1	Examiners should consider the context and scientific use of any keywords when awarding marks. Although keywords may be present, marks should not be awarded if the keywords are used incorrectly.
2	The examiner should not choose between contradictory statements given in the same question part, and credit should not be awarded for any correct statement that is contradicted within the same question part. Wrong science that is irrelevant to the question should be ignored.
3	Although spellings do not have to be correct, spellings of syllabus terms must allow for clear and unambiguous separation from other syllabus terms with which they may be confused (e.g. ethane / ethene, glucagon / glycogen, refraction / reflection).
4	The error carried forward (ecf) principle should be applied, where appropriate. If an incorrect answer is subsequently used in a scientifically correct way, the candidate should be awarded these subsequent marking points. Further guidance will be included in the mark scheme where necessary and any exceptions to this general principle will be noted.
5	‘List rule’ guidance For questions that require ***n*** responses (e.g. State **two** reasons …): • The response should be read as continuous prose, even when numbered answer spaces are provided. • Any response marked *ignore* in the mark scheme should not count towards ***n***. • Incorrect responses should not be awarded credit but will still count towards ***n***. • Read the entire response to check for any responses that contradict those that would otherwise be credited. Credit should **not** be awarded for any responses that are contradicted within the rest of the response. Where two responses contradict one another, this should be treated as a single incorrect response. • Non-contradictory responses after the first ***n*** responses may be ignored even if they include incorrect science.

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6 Calculation specific guidance

Correct answers to calculations should be given full credit even if there is no working or incorrect working, **unless** the question states 'show your working'.

For questions in which the number of significant figures required is not stated, credit should be awarded for correct answers when rounded by the examiner to the number of significant figures given in the mark scheme. This may not apply to measured values.

For answers given in standard form (e.g. $a \times 10^n$) in which the convention of restricting the value of the coefficient (a) to a value between 1 and 10 is not followed, credit may still be awarded if the answer can be converted to the answer given in the mark scheme.

Unless a separate mark is given for a unit, a missing or incorrect unit will normally mean that the final calculation mark is not awarded. Exceptions to this general principle will be noted in the mark scheme.

7 Guidance for chemical equations

Multiples / fractions of coefficients used in chemical equations are acceptable unless stated otherwise in the mark scheme.

State symbols given in an equation should be ignored unless asked for in the question or stated otherwise in the mark scheme.

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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
	information missing or insufficient for credit
	benefit of doubt given
	contradition in response, mark not awarded
	incorrect point or mark not awarded
	key point attempted working towards marking point incomplete answer response seen but not credited blank page seen
	error carried forward applied
	incorrect or insufficient response, mark not awarded
	response has not answered question
	benefit of doubt was considered, but the response was decided to not be sufficiently close for benefit of doubt to be applied
	incorrect point or mark not awarded
	blank page seen

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Annotation	Meaning
	correct point of mark awarded

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Question	Answer	Marks	Guidance
1(a)(i)	E	**1**	ALLOW: C_2H_4 IGNORE: name
1(a)(ii)	A	**1**	ALLOW: O_2 IGNORE: name
1(a(iii)	D	**1**	ALLOW: CH_3OH IGNORE: name
1(a)(iv)	A	**1**	ALLOW: O_2 IGNORE: name
1(a)(v)	C	**1**	ALLOW: NH_3 IGNORE: name
1(a)(vi)	E	**1**	ALLOW: C_2H_4 IGNORE: name
1(b)	B and E	**2**	ALLOW: C_3H_8 and C_2H_4 IGNORE: names

Question	Answer	Marks	Guidance
2(a)	has two atoms (in a molecule) / two atoms (combined)	**1**	ALLOW: pairs of atoms
2(b)(i)	I_2 (1) 2 NaBr (1)	**2**	
2(b)(ii)	displacement	**1**	

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Question	Answer	Marks	Guidance
2(b)(iii)	iodine less reactive than bromine / bromine more reactive than iodine	1	IGNORE: iodine below bromine in Group VII REJECT: iodine less reactive than bromide / iodine less reactive than sodium
2(c)	bonding pair of electrons between fluorine atoms (1) 6 non-bonding electrons on each fluorine atom (1)	2	NOTE: electrons do not have to be paired ALLOW: all dots, all crosses or any mixture IGNORE: inner electrons
2(d)	2,8	1	ALLOW: $1s^2 2s^2 2p^6$

Question	Answer	Marks	Guidance
3(a)(i)	aqueous	1	ALLOW: dissolved in water / in solution / solvent IGNORE: mixed with water soluble / can dissolve diluted in water REJECT: liquid has water in it presence of water
3(a)(ii)	calcium chloride	1	IGNORE: formula
3(b)(i)	gas released gas escapes gas lost	1	ALLOW: carbon dioxide instead of gas
3(b)(ii)	149.2 (g)	1	
3(b)(iii)	X at beginning of line	1	ALLOW: X between 149.8 and 150.0 g NOTE: X must be close to the line in the range

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Question	Answer	Marks	Guidance
3(b)(iv)	curve steeper and starting at 150.0 g (1) line levels off at 148.8 g AND not hitting original line before it's reached 148.8 g AND before 90 seconds (1)	**2**	REJECT: curves which follow original curve for more than 5 small squares on vertical axis curves which follow the y-axis for more than 5 small squares crossing of original line NOTE: must be a curve ALLOW: overshoot 1 small square at below 148.8 g AND return ½ small square.
3(b)(v)	rate faster reaction speeds up increase	**1**	comparative answer ALLOW: quicker IGNORE: reference to time IGNORE: reference to calcium carbonate mass
3(b)(vi)	rate faster reaction speeds up increase	**1**	comparative answer ALLOW: quicker IGNORE: reference to time IGNORE: reference to calcium carbonate mass
3(c)	mol / dm^3	**1**	

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Question	Answer	Marks	Guidance
3(d)(i)	soluble base	**1**	ALLOW: base which dissolves **(**in water**)** ALLOW substance that produces hydroxide (ions) **when dissolved (**in water**)** ALLOW soluble proton acceptor ALLOW basic solution IGNORE reacts with water (to form hydroxide) IGNORE references to pH OR neutralises acids OR named examples
3(d)(ii)	colourless (1) to blue (1)	**2**	ALLOW: 1 mark for blue to colourless REJECT: any other colours

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Question	Answer	Marks	Guidance
4(a)(i)	values between –87 °C and –1 °C (inclusive of these values)	**1**	
4(a)(ii)	no trend (in the melting point) the figures go up and down	**1**	ALLOW: no pattern random
4(a)(iii)	increases (with the number of carbon atoms) increases (down the series)	**1**	
4(a)(iv)	liquid (1) –1 °C is lower than the boiling point but higher than the melting point –1 °C is between the melting point and boiling point –1 °C is more than –130 °C AND less than +36 °C	**2**	Mark independently ALLOW: molten IGNORE: melted ALLOW: it is between the melting and boiling points ALLOW: melted but not boiled yet IGNORE: values quoted but not used
4(a)(v)	C_nH_{2n+2}	**1**	
4(b)(i)	circle around COOH group	**1**	
4(b)(ii)	$C_5H_8O_3$	**1**	ALLOW: any order REJECT: $C^5H^8O^3$
4(b)(iii)	contains carbon-carbon double bond(s) contains C=C bond(s)	**1**	ALLOW: double bond between carbons carbon double bond IGNORE: reference to double bonds unqualified carbon bonds are not single IGNORE: reference to not maximum amount of hydrogen

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Question	Answer	Marks	Guidance
4(c)	(catalytic) addition (1) 1 mark each for any two of: • 300 °C • 6000 kPa 60 atm • acid (catalyst)	**3**	ALLOW: hydration ALLOW: temperature in range 250 °C to 350 °C ALLOW: pressure in range 50 to 70 atm or 5000 to 7000 kPa For type of catalyst ALLOW: phosphoric (V) acid as 'acid' IGNORE: lack of oxidation state but must be correct if used IGNORE: dilute conc IGNORE: H^+ ALLOW: H_3PO_4 without term 'acid' but IGNORE incorrect formulae if name is used

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Question	Answer	Marks	Guidance
5(a)	1 mark each for any two of: does not have a definite shape takes the shape of the container (1) does not have a definite volume does not have a fixed volume (1) spreads everywhere flows everywhere (1) can be compressed (easily) (1)	**2**	Read across the lines for the two marking points. ALLOW: does not have a fixed shape does not have a rigid shape fills the available space fills the container IGNORE: no volume IGNORE: low density IGNORE: references to particle arrangement

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Question	Answer	Marks	Guidance
5(b)	solid: arrangement: regular fixed pattern (1) motion: vibrating (1) liquid: arrangement: irregular no (particular) arrangement (1) motion: sliding moving over each other (1)	4	Answers within the correct box only not read across. ALLOW: particle diagrams only for arrangement (do not need to be labelled). If a diagram and written answer given, both must be correct. If a diagram is drawn, two rows of three minimum. ALLOW: lattice uniform (pattern) (arranged) in lines (arranged) in rows layers ordered IGNORE: distance between particles near each other fixed arrangement fixed positions fixed very arranged ALLOW: no motion no movement cannot move do not move ALLOW: not moving (from place to place) ALLOW: cannot move freely ALLOW: random not ordered no fixed arrangement ALLOW: random irregular ALLOW: slide on slide off roll over each other IGNORE: collide with each other always moving not much space to move free to move slight movement slightly free to move vibration random directions comments about arrangement and separation

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Question	Answer	Marks	Guidance
5(b)			IGNORE: move past each other flow IGNORE: references to speed e.g. slow fast
5(c)	all three correct = 2 marks one correct = 1 mark liquid oxygen changes into solid oxygen: freezing solid copper changes into liquid copper: melting bromine gas changes into liquid bromine: condensing	**2**	
5(d)	volume decreases	**1**	ALLOW: stated volumes less than 80 cm^3

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Question	Answer	Marks	Guidance
6(a)(i)	IV 4	**1**	
6(a)(ii)	electrons: 20 (1) neutrons: 26 (1) protons: 22 (1)	**3**	
6(b)	one mark each for any two of: • form coloured compounds form coloured ions • high melting point high boiling point • act as catalysts • high density	**2**	NOTE: apply listing ALLOW: have variable oxidation numbers variable oxidation state more than one ion form ions of different charges strong hard ALLOW: higher melting point higher boiling point IGNORE: sonorous shiny IGNORE: reactions of transition metals
6(c)(i)	4 (Ti) and 3 (O_2) (1)	**1**	
6(c)(ii)	basic because titanium is a metal	**1**	ALLOW: basic as titanium is on the left of the Periodic Table basic because it's a metal

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Question	Answer	Marks	Guidance
6(d)	negative electrode: titanium (1) positive electrode: chlorine (1) observations: (yellow-)green vapour (1)	**3**	NOTE: correct products at wrong electrodes = 1 mark REJECT: charges on products ALLOW: Ti ALLOW: $ClCl_2$ REJECT: chloride ALLOW: green gas green bubbles green fumes IGNORE: yellow smell NOTE: No ECF if reversed
6(e)	172 (2 marks) IF 2 marks not scored allow 1 mark for: O = 96 OR N = 28	**2**	

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Question	Answer	Marks	Guidance
7(a)	sewage: (contains microbes) which cause **disease** (1) nitrates: deoxygenation (of water) (1)	**2**	ALLOW: causes **disease** (unqualified) ALLOW: sickness for disease ALLOW: named water-borne disease e.g. cholera , typhoid ALLOW: decrease oxygen levels reduce oxygen remove oxygen deoxidise eutrophication lack of oxygen decrease concentration of oxygen IGNORE: growth of algae kills marine life
7(b)	improved plant growth	**1**	ALLOW: to make crops grow better to make crops grow fast(er) increase growth of plant increase yield (of crops) boosts growth of plants increase growth rate more crops healthy crops better crops plants improves plant growth improves yield improves growth good growth better growth IGNORE: helping of plant growth more nutrients kill pests kill bacteria
7(c)	test: flame test (1) observations: yellow (flame) (1)	**2**	NOTE: marks are independent – even if it does not match the test ALLOW: description of flame test flame ALLOW: orange (flame) NOTE: must mention flame somewhere
7(d)(i)	sedimentation filtration	**1**	

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Question	Answer	Marks	Guidance
7(d)(ii)	carbon	1	
7(e)	white (1) to blue (1)	2	ALLOW: blue to white for 1 mark. IGNORE: shades

Question	Answer	Marks	Guidance
8(a)(i)	stronger harder (more) resistant to corrosion	1	ALLOW: does not corrode does not rust
8(a)(ii)	copper (1) zinc (1)	2	
8(b)	magnesium zinc iron copper gold (2) if 2 marks not obtained allow 1 mark for 1 pair reversed or complete reversal	2	NOTE: 1 mark for one metal in the wrong order
8(c)(i)	hematite	1	ALLOW: haematite
8(c)(ii)	provide heat produce carbon dioxide produce carbon monoxide	1	ALLOW: to reduce iron oxide
8(c)(iii)	carbon monoxide	1	

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