CAMBRIDGE
International Education

Cambridge IGCSE™ (9–1)

CHEMISTRY **0971/32**

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	<u>'List rule' guidance</u> 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	<u>Calculation specific guidance</u> 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	<u>Guidance for chemical equations</u> 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
BOD	benefit of doubt given
CON	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
ECF	error carried forward applied
I	incorrect or insufficient response, mark not awarded
NAQ	response has not answered question
NBOD	benefit of doubt was considered, but the response was decided to not be sufficiently close for benefit of doubt to be applied
R	incorrect point or mark not awarded
SEEN	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)	F	1	ALLOW: C_2H_5OH IGNORE: name
1(a)(ii)	E	1	ALLOW: N_2 IGNORE: name
1(a)(iii)	D	1	ALLOW: CH_3CH_2COOH IGNORE: name
1(a)(iv)	A	1	ALLOW: C_2H_6 IGNORE: name
1(a)(v)	B	1	ALLOW: CO_2 IGNORE: name
1(a)(vi)	B	1	ALLOW: CO_2 IGNORE: name
1(a)(vii)	C	1	ALLOW: Cl_2 IGNORE: name
1(b)	C and E	2	ALLOW: N_2 and Cl_2 IGNORE: names

Question	Answer	Marks	Guidance
2(a)(i)	values between 75 °C and +170 °C (inclusive of these values)	1	
2(a)(ii)	values between 190 and 245 (inclusive of these values)	1	IGNORE: units

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Question	Answer	Marks	Guidance
2(a)(iii)	solid (1) 95 °C is lower than the melting point (and boiling point) / (temperature) below melting point / (temperature) below +180° C (1)	**2**	NOTE: independent marks IGNORE: frozen ALLOW: melting point is above 95° C / +180 °C is above 95 °C / it is lower than the melting and boiling point / it is under the melting point IGNORE: reached / passed IGNORE: values quoted but not used
2(a)(iv)	increases	**1**	ALLOW: become more dense
2(b)(i)	2 (K) (1) 2 (H_2O) (1)	**2**	
2(b)(ii)	lighted splint **and** (squeaky) pop	**1**	ALLOW: alternative to lighted e.g. light(ing) / lighten(ed) / lit / flaming / flame / burning ALLOW: alternative to splint e.g. spill / match/ splinter etc. ALLOW: 'flame' on its own (no splint) ALLOW: pops in a flame / burns with a pop ALLOW: explodes / 'pops-up' for 'pop' ALLOW: lighted splint being extinguished as it pops IGNORE: 'wooden splint test' REJECT: glowing splint

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Question	Answer	Marks	Guidance
2(c)	bonding pair of electrons between N and each H (1) 2 non-bonding electrons on nitrogen atom and no extra electrons on the H atom(s) (1)	**2**	NOTE: independent marks NOTE: electrons can be all dots / all crosses or any mixture IGNORE: inner shell electrons NOTE: electrons do not have to be paired

Question	Answer	Marks	Guidance
3(a)(i)	solid	**1**	
3(a)(ii)	magnesium sulfate	**1**	NOTE: correct spelling only for sulfate / sulphate
3(a)(iii)	(gas) syringe	**1**	ALLOW: measuring cylinder / burette **over water** IGNORE: measuring cylinder (unqualified) CON: other apparatus
3(b)(i)	26 (cm^3)	**1**	
3(b)(ii)	45 (s)	**1**	ALLOW: in range 44 to 45 (s)

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Question	Answer	Marks	Guidance
3(b)(iii)	steeper gradient with line starting at (0,0) (1) line levels off at 40 cm^3 AND not hitting original line before it's reached 40 cm^3 and before 40s (1)	2	NOTE: starts at (0,0) away from y-axis by (1,5) (within half a small square) No more than 2 squares high following the original line ALLOW: overshoot 1 small square at 40 cm^3 AND return ½ small square. ALLOW: splitting and rejoining lines if either line could be ok.
3(b)(iv)	rate faster / reaction speeds up / increase	1	comparative answer IGNORE: reference to time IGNORE: reference to carbon dioxide volume
3(b)(v)	rate slower / more slowly / decrease	1	comparative answer ALLOW: reaction slows down IGNORE: reference to time IGNORE: reference to carbon dioxide volume
3(c)(i)	H^+	1	ALLOW: H+ REJECT: h^+
3(c)(ii)	pH 2	1	

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Question	Answer	Marks	Guidance
4(a)(i)	circle around OH group	**1**	
4(a)(ii)	$C_5H_{10}O_3$	**1**	ALLOW: any order REJECT: $C^5H^{10}O^3$
4(a)(iii)	contains carbon-carbon single bond(s) **only** / contains C - C bond(s) **only**	**1**	ALLOW: single bond between carbons **only** / carbon single bond **only** / carbon - carbon bonds are single ALLOW: does not contain C=C / does not contain carbon - carbon double bonds / no double bond between carbons IGNORE: reference to single bonds unqualified / carbon bonds are not double IGNORE: reference to maximum amount of hydrogen

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Question	Answer	Marks	Guidance
4(b)(i)	fermentation (1) 1 mark each for any two of: • 25–35 °C (inclusive of these values) • yeast • absence of oxygen / anaerobic	3	NOTE: independent marks ALLOW: 25–40 °C / room temperature IGNORE: warm temperature REJECT: if range given but one of the figures is outside the range ALLOW: zymase IGNORE: catalyst / enzymes ALLOW: no air / no oxygen REJECT: presence of oxygen (this marking point only) ALLOW: pH 7 / neutral pH (extra marking point)
4(b)(ii)	solvent / fuel	1	ALLOW: sanitiser / steriliser / disinfectant / kill bacteria IGNORE: to drink / rubbing alcohol
4(c)	magnesium ethanoate (1) hydrogen (1)	2	NOTE: correct spelling of ethanoate IGNORE: formulas

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Question	Answer	Marks	Guidance
5(a)	1 mark each for any two of: • has a definite volume / fixed volume • takes the shape of its container / no fixed shape • flows over a surface / can be poured over a surface • cannot be compressed	**2**	ALLOW: volume does not change ALLOW: shape changes ALLOW: can flow IGNORE: references to particle arrangement
5(b)	solid: motion: vibrating (1) separation of particles: touching / (very) close (together) (1) liquid: motion: motion: sliding / moving over each other (1) separation of particles: touching / close (together) (1)	**4**	ALLOW: particle diagrams only for separation (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: no motion / no movement / cannot move / do not move ALLOW: not moving (from place to place) ALLOW: cannot move freely ALLOW: no separation / no room between / (closely) packed / (tightly) packed / packed / together / no spaces ALLOW: random / irregular ALLOW: slide on each other / slide off each other / roll over each other

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Question	Answer	Marks	Guidance
5(b)			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 IGNORE: move past each other / flow IGNORE: references to speed e.g. slow / fast ALLOW: packed together / together (unqualified) / only small spaces between / loosely packed / slightly touching / near / some are touching ALLOW: a **few** / **some** spaces (between particles) NOTE: particle diagram – some particles must be touching REJECT: apart (unqualified) / separated (unqualified) REJECT: small spaces (between **all** particles / spaces (unqualified) REJECT: not closely packed REJECT: together ideas about methods of separation e.g. distillation
5(c)	all three correct = 2 marks one correct = 1 mark liquid nitrogen turns into solid nitrogen: freezing liquid cobalt changes into cobalt gas: evaporating steam changes into liquid water: condensing	**2**	

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Question	Answer	Marks	Guidance
5(d)	diffusion	1	

Question	Answer	Marks	Guidance
6(a)(i)	IV / 4	1	
6(a)(ii)	electrons: 26 (1) neutrons: 32 (1) protons: 28 (1)	3	
6(b)(i)	(strong) electrostatic attraction (1) between oppositely charged ions (1)	2	ALLOW: positive ions AND negative ions / cations AND anions
6(b)(ii)	1 mark each for any two of: high melting point / high boiling point (1) conducts electricity when molten / conducts electricity when in aqueous solution (1) soluble in water (1)	2	ALLOW: solid at rtp for first mark IGNORE: does not conduct when solid REJECT: conducts when solid ALLOW: forms aqueous solution IGNORE: conducts heat when molten or aqueous / reference to colour / brittle
6(c)(i)	2 (Ni) (1) O_2 (1)	2	REJECT: $2O_2$
6(c)(ii)	basic because nickel is a metal	1	ALLOW: basic as nickel is on the left of the Periodic Table / basic because it's a metal
6(d)(i)	carbon / graphite	1	

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Question	Answer	Marks	Guidance
6(d)(ii)	negative electrode: nickel (1) positive electrode: bromine (1) observations: (red-) brown liquid / brown vapour (1)	**3**	NOTE: correct products at wrong electrodes = 1 mark REJECT: charges on products ALLOW: Ni REJECT: Nickel (II) ALLOW: Br / Br_2 REJECT: bromide ALLOW: brown gas / brown bubbles NOTE: No ECF if reversed
6(e)	93 (2 marks) IF 2 marks not scored allow 1 mark for: O = 32 OR H = 2	**2**	
6(f)(i)	<u>mixture</u> of <u>metal</u> with another element	**1**	ALLOW: mixture of metal with another metal / mixture of metal with a non-metal / mixture of metals REJECT: bonded / chemically combined / combined
6(f)(ii)	1 mark each for any two of: • chromium • iron • carbon	**2**	

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Question	Answer	Marks	Guidance
7(a)(i)	fertilisers	1	ALLOW: sewage / manure
7(a)(ii)	deoxygenation of water (1)	1	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(a)(iii)	toxic / poisonous (1)	1	NOTE: toxic / poisonous only
7(b)	test: flame test (1) observations: lilac (flame) (1)	2	NOTE: marks are independent ALLOW: description of flame test / flame ALLOW: purple (flame) NOTE: must mention flame somewhere
7(c)	28.1 (g)	1	
7(d)	sedimentation and filtration – to remove solids addition of carbon – to remove tastes / odours chlorination – to kill microbes	3	ALLOW: insoluble substances ALLOW: to remove colour ALLOW: to kill bacteria
7(e)	(distilled water) contains fewer impurities	1	ALLOW: more pure / pure / contains no impurities IGNORE: more clean
7(f)	blue (1) (to) pink (1)	2	ALLOW: pink to blue for 1 mark only. IGNORE: shades

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