



**General Certificate of Secondary Education
2021–2022**

**Single Award Science
Chemistry**

Unit 2
Foundation Tier

[GSA21]

TUESDAY 23 NOVEMBER, MORNING

**MARK
SCHEME**

General Marking Instructions

Introduction

Mark schemes are intended to ensure that the GCSE examinations are marked consistently and fairly. The mark schemes provide markers with an indication of the nature and range of candidates' responses likely to be worthy of credit. They also set out the criteria which they should apply in allocating marks to candidates' responses.

Assessment objectives

Below are the assessment objectives for GCSE Single Award Science

Candidates must:

- AO1** Demonstrate knowledge and understanding of scientific ideas, scientific techniques and procedures;
- AO2** Apply knowledge, skills and understanding of scientific ideas, scientific enquiry, techniques and procedures; and
- AO3** Analyse information and ideas to interpret and evaluate; make judgements and draw conclusions; develop and improve experimental procedures.

Quality of candidates' responses

In marking the examination papers, examiners should be looking for a quality of response reflecting the level of maturity which may reasonably be expected of a 16-year-old which is the age at which the majority of candidates sit their GCSE examinations.

Flexibility in marking

COVID-19 Context

Given the unprecedented circumstances presented by the COVID-19 public health crisis, senior examiners, under the instruction of CCEA awarding organisation, are required to train assistant examiners to apply the mark scheme in case of disrupted learning and lost teaching time. The interpretation and intended application of the mark scheme for this examination series will be communicated through the standardising meeting by the Chief or Principal Examiner and will be monitored through the supervision period. This paragraph will apply to examination series in 2021–2022 only.

Mark schemes are not intended to be totally prescriptive. No mark scheme can cover all the responses which candidates may produce. In the event of unanticipated answers, examiners are expected to use their professional judgement to assess the validity of answers. If an answer is particularly problematic, then examiners should seek the guidance of the Supervising Examiner.

Positive marking

Examiners are encouraged to be positive in their marking, giving appropriate credit for what candidates know, understand and can do rather than penalising candidates for errors or omissions. Examiners should make use of the whole of the available mark range for any particular question and be prepared to award full marks for a response which is as good as might reasonably be expected of a 16-year-old GCSE candidate.

Awarding zero marks

Marks should only be awarded for valid responses and no marks should be awarded for an answer which is completely incorrect or inappropriate.

Marking Calculations

In marking answers involving calculations, examiners should apply the 'own figure rule' so that candidates are not penalised more than once for a computational error.

Types of mark schemes

Mark schemes for tasks or questions which require candidates to respond in extended written form are marked on the basis of levels of response which take account of the quality of written communication.

Other questions which require only short answers are marked on a point for point basis with marks awarded for each valid piece of information provided.

Levels of response

Tasks and questions requiring candidates to respond in extended writing are marked in terms of levels of response. In deciding which level of response to award, examiners should look for the 'best fit' bearing in mind that weakness in one area may be compensated for by strength in another. In deciding which mark within a particular level to award to any response, examiners are expected to use their professional judgement. The following guidance is provided to assist examiners.

- **Threshold performance:** Response which just merits inclusion in the level and should be awarded a mark at or near the bottom of the range.
- **Intermediate performance:** Response which clearly merits inclusion in the level and should be awarded a mark at or near the middle of the range.
- **High performance:** Response which fully satisfies the level description and should be awarded a mark at or near the top of the range.

Quality of written communication

Quality of written communication is taken into account in assessing candidates' responses to all tasks and questions that require them to respond in extended written form. These tasks and questions are marked on the basis of levels of response. The description for each level of response includes reference to the quality of written communication.

For conciseness, quality of written communication is distinguished within levels of response as follows:

Level 1: Quality of written communication is basic.

Level 2: Quality of written communication is good.

Level 3: Quality of written communication is excellent.

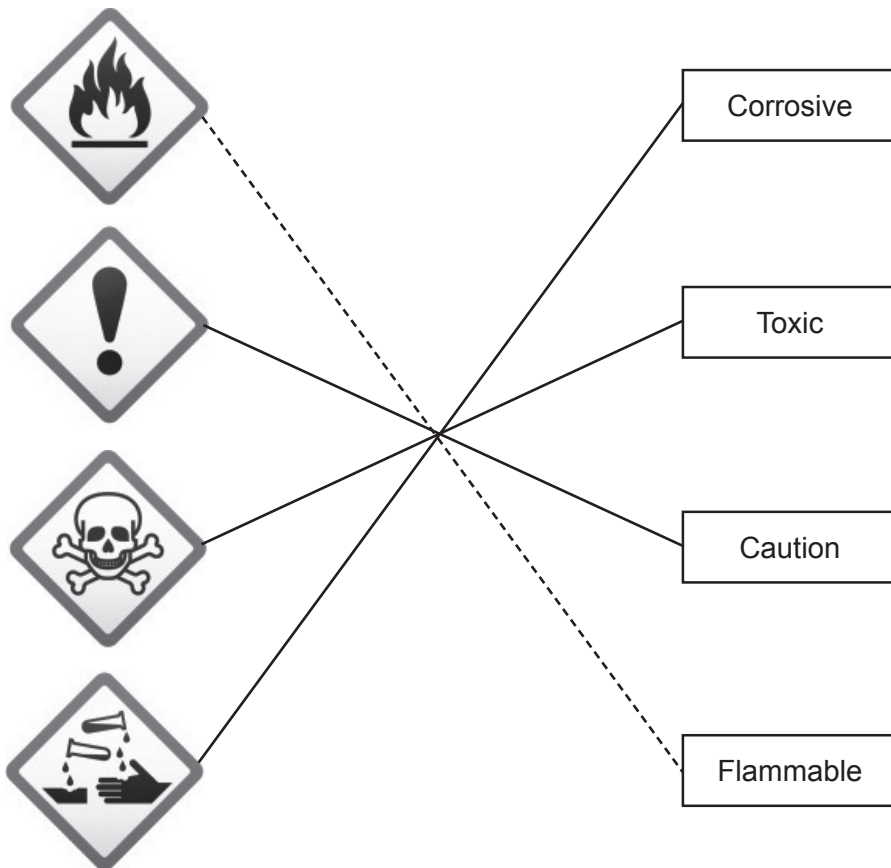
In interpreting these level descriptions, examiners should refer to the more detailed guidance provided below:

Level 1 (Basic): The candidate makes only a limited selection and use of an appropriate form and style of writing. The organisation of material may lack clarity and coherence. There is little use of specialist vocabulary. Presentation, spelling, punctuation and grammar may be such that intended meaning is not clear.

Level 2 (Good): The candidate makes a reasonable selection and use of an appropriate form and style of writing. Relevant material is organised with some clarity and coherence. There is some use of appropriate specialist vocabulary. Presentation, spelling, punctuation and grammar are sufficiently competent to make meaning clear.

Level 3 (Excellent): The candidate successfully selects and uses the most appropriate form and style of writing. Relevant material is organised with a high degree of clarity and coherence. There is widespread and accurate use of appropriate specialist vocabulary. Presentation, spelling, punctuation and grammar are of a sufficiently high standard to make meaning clear.

1 (a)



Source: © Getty Images

3 correct [2] 1 or 2 correct [1]

[2]

(b) No naked flame (near the flammable substance)

[1]

3

2 (a) (i) A man-made/manufactured/processed material

[1]

(ii)

Natural	Synthetic
cotton	plastic
wood	
wool	

All correct [2] 2 or 3 correct [1]

[2]

(b) Any **two** from:

- nylon creases less than linen/nylon easier to iron
- nylon is more easily made than linen
- nylon does not take as long to make

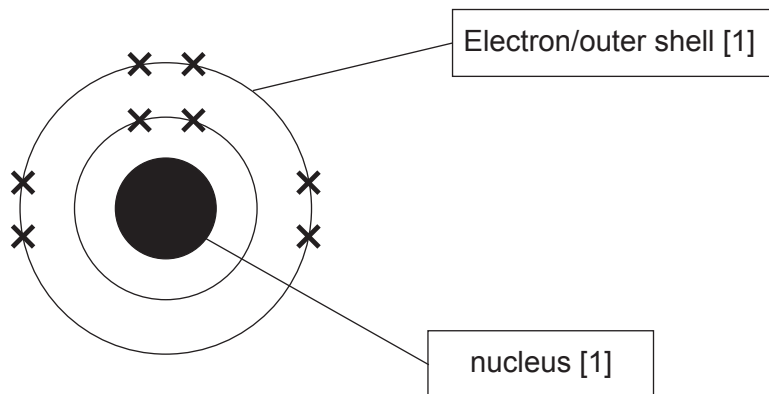
[2]

5

AVAILABLE
MARKS

3	(a) (i)	Condensation [1] cooled [1]	[2]	AVAILABLE MARKS
	(ii)	Solid to gas	[1]	
	(b)	Salt [1] brine/salt solution [1]	[2]	
	(c) (i)	A	[1]	
	(ii)	Conical flask	[1]	
4	(a) (i)	3	[1]	
	(ii)	Drain cleaner [1] tomato juice [1]	[2]	
	(b)	Baking soda is an alkali [1] so it will neutralise the acid [1]	[2]	
	(c)	Universal indicator shows a range of pH values or colours/red or blue litmus only shows 2 colours [1] Universal indicator shows the strength of an acid or alkali/shows neutral (accept converse) [1] (do not accept 'more accurate')	[2]	
				7
				7

5 (a) (i)



[2]

(ii) Group 6 [1]
Period 2 [1]

[2]

(iii) 8

[1]

(b) (i) Correct electronic configuration, 2,8,7

[1]

(ii) The halogens

[1]

(iii)

Statement	Tick
it is a metal	
it is a non-metal	✓ [1]
it forms a positive ion when it reacts with oxygen	
it is a compound	
it belongs to the same Period as magnesium	✓ [1]

[2]

AVAILABLE
MARKS

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6 Indicative Content:

- arch, loop, whorl and composite (any **two**)
- dust with carbon black powder for white surface
- dust off excess powder with brush
- use sticky tape/sellotape to lift the fingerprint
- transfer the fingerprint to card
- compare to the national database
- fingerprints are unique

Band	Response	Mark
A	Candidates use six to seven of the points above to explain, using appropriate specialist terms, and in a logical sequence, the method used to take fingerprints from different types of surfaces. They use good spelling, punctuation and grammar and the form and style are of a high standard.	[5]–[6]
B	Candidates use four to five of the points above to explain, using appropriate specialist terms, and in a logical sequence, the method used to take fingerprints from different types of surfaces. They use satisfactory spelling, punctuation and grammar and the form and style are of a satisfactory standard.	[3]–[4]
C	Candidates use one to three of the points given above to explain how fingerprints are taken. They use limited spelling, punctuation and grammar and they make little use of specialist terms. The form and style are of a limited standard.	[1]–[2]
D	Response not worthy of credit.	[0]

[6]

AVAILABLE
MARKS

6

			AVAILABLE MARKS
7	(a) (i)	All points correctly plotted [2] (4 points correctly plotted [1]) line through points [1]	[3]
	(ii)	As atomic number increases, boiling point decreases	[1]
	(b) (i)	Heat produced	[1]
	(ii)	Increases	[1]
	(iii)	Potassium hydroxide	[1]
	(iv)	A lit splint [1] burns with a squeaky pop [1]	[2]
	(c) (i)	Exothermic	[1]
	(ii)	Same mass of metal/same volume of acid/same type of acid/ same concentration of acid/same length of time	[1]
	(iii)	He needs to measure the change [1] in temperature [1]	[2]
			13
8	(a) (i)	C_2H_3Cl	[1]
	(ii)	$ \begin{array}{cccc} & H & H & H & H \\ & & & & \\ H & -C & -C & -C & -C-H \\ & & & & \\ & H & H & H & H \end{array} $	[1]
	(iii)	Gas	[1]
	(b) (i)	3	[1]
	(ii)	9	[1]
9	(a)	4	[1]
	(b)	Neon	[1]
	(c)	Neon	[1]
	(d)	As atomic number increases metallic character decreases	[1]
	(e)	Li_2O	[1]
			5
Total			60