



Rewarding Learning

**General Certificate of Secondary Education
2017–2018**

Science: Single Award

Unit 2 (Chemistry)

Foundation Tier

[GSS21]

THURSDAY 8 NOVEMBER 2018, MORNING

**MARK
SCHEME**

General Marking Instructions

Introduction

Mark schemes are published to assist teachers and students in their preparation for examinations. Through the mark schemes teachers and students will be able to see what examiners are looking for in response to questions and exactly where the marks have been awarded. The publishing of the mark schemes may help to show that examiners are not concerned about finding out what a student does not know but rather with rewarding students for what they do know.

The Purpose of Mark Schemes

Examination papers are set and revised by teams of examiners and revisers appointed by the Council. The teams of examiners and revisers include experienced teachers who are familiar with the level and standards expected of students in schools and colleges.

The job of the examiners is to set the questions and the mark schemes; and the job of the revisers is to review the questions and mark schemes commenting on a large range of issues about which they must be satisfied before the question papers and mark schemes are finalised.

The questions and the mark schemes are developed in association with each other so that the issues of differentiation and positive achievement can be addressed right from the start. Mark schemes, therefore, are regarded as part of an integral process which begins with the setting of questions and ends with the marking of the examination.

The main purpose of the mark scheme is to provide a uniform basis for the marking process so that all the markers are following exactly the same instructions and making the same judgements in so far as this is possible. Before marking begins a standardising meeting is held where all the markers are briefed using the mark scheme and samples of the students' work in the form of scripts. Consideration is also given at this stage to any comments on the operational papers received from teachers and their organisations. During this meeting, and up to and including the end of the marking, there is provision for amendments to be made to the mark scheme. What is published represents this final form of the mark scheme.

It is important to recognise that in some cases there may well be other correct responses which are equally acceptable to those published: the mark scheme can only cover those responses which emerged in the examination. There may also be instances where certain judgements may have to be left to the experience of the examiner, for example, where there is no absolute correct response – all teachers will be familiar with making such judgements.

1 (a) Hazard symbol

Name



toxic



corrosive



explosive

flammable

[2]

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(b) Greater visual impact/eye-catching/internationally understood/easier to understand/no need to be able to read

[1]

3

2 (a) (i) Strong [1]
insulator [1]

[2]

(ii) Copper is a conductor [1] it will transfer heat easily [1]
or copper has a high melting point [1] it will not melt on the cooker [1] [2]

(b) A natural material is obtained from living things/does not need processed by chemical methods

[1]

5

3 (a) Lava [1]
magma [1]

[2]

(b) Tectonic [1]
pressure [1]

[2]

(c) Igneous [1]
granite/basalt (or other suitable) [1]

[2]

6

AVAILABLE
MARKS

			AVAILABLE MARKS								
4	(a)	C	[1]	5							
	(b)	Repeat the test for a new sample of each fibre	[1]								
	(c)	Same length/thickness of fibre	[1]								
	(d)	No label on the y-axis/vertical axis [1] value for B plotted incorrectly [1]	[2]								
5	(a)	(i) pH sensor/probe/meter	[1]	8							
		(ii) 8.2	[1]								
		(iii) Emerald catfish	[1]								
		(iv) Three	[1]								
		(v) 26 °C	[1]								
	(b)	(i) Limestone is an alkali [1] this will neutralise/raise the pH of the water [1]	[2]								
		(ii) CaCO ₃	[1]								
6	(a)	The number of protons in an atom	[1]								
	(b)	(i) As the atomic number increases the radius/size decreases	[1]								
		(ii) 0.04 nm ± 0.005 nm	[1]								
	(c)	1 × 10 ⁻⁹ m	[1]								
	(d)	Lithium	[1]								
	(e)	(i)									
		<table border="1" style="margin-left: 20px;"> <thead> <tr> <th style="text-align: center;">Particle</th> <th style="text-align: center;">Number</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">proton</td> <td style="text-align: center;">5</td> </tr> <tr> <td style="text-align: center;">electron</td> <td style="text-align: center;">5</td> </tr> <tr> <td style="text-align: center;">neutron</td> <td style="text-align: center;">6</td> </tr> </tbody> </table>	Particle	Number	proton	5	electron	5	neutron	6	[3]
Particle	Number										
proton	5										
electron	5										
neutron	6										
		(ii) Neutron	[1]								
		(iii) 2,3 drawn correctly	[1]	10							

			AVAILABLE MARKS	
7	(a)	Carbon [1] hydrogen and carbon (either order) [1] hydrocarbon [1]	[3]	8
	(b) (i)	75%	[1]	
		(ii) Any similarity, e.g. each chart has same percentage of oil/largest percentage comes from fossil fuels [1] Any difference, e.g. each chart has different percentages of nuclear/coal [1] (must refer to USA/Europe)	[2]	
(c)	Oxygen [1] carbon dioxide and water [1]	[2]		
8	(a)	A material that changes its properties [1] when there is a change in the environment (heat/light) [1]	[2]	5
	(b) (i)	S	[1]	
	(ii)	Any two from: • plastic R changes colour at 70 °C • when the bottle is green, milk can be added • when the bottle is red it is not safe to add milk (2 x [1])	[2]	
9	(a) (i)	Silver/grey/shiny solid or metal	[1]	4
	(ii)	White light	[1]	
	(iii)	Grey/white ash or powder	[1]	
(b)	Oxidation	[1]		

10 Indicative content

- calcium/magnesium ion causes hard water
- method: take sample of water add soap
- shake until lather forms
- record volume of soap/height of lather
- boil water and repeat test
- fair test: same volume of water/same amount of shaking
- result: less soap needed after boiling/more lather after boiling

Band	Response	Mark
A	Candidates must use appropriate specialist terms throughout to describe how to test for temporary hard water using six to seven of the points above, in a logical sequence. They use good spelling, punctuation and grammar and the form and style are of a high standard.	[5]–[6]
B	Candidates use some appropriate specialist terms to describe how to test for temporary hard water using four to five of the points above, in a logical sequence. They use satisfactory spelling, punctuation and grammar and the form and style are of a satisfactory standard.	[3]–[4]
C	Candidates describe how to test for temporary hard water using one to three of the above points. However, these are not presented in a logical sequence. They use limited spelling, punctuation and grammar and have made limited use of specialist terms. The form and style are of a limited standard.	[1]–[2]
D	Not worthy of credit.	[0]

[6]

Total

AVAILABLE MARKS

6

60