



Rewarding Learning

**General Certificate of Secondary Education
2014–2015**

Science: Single Award

Unit 2 (Chemistry)

Foundation Tier

[GSS21]

THURSDAY 14 MAY 2015, 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.

			AVAILABLE MARKS						
1	(a) (i) Propanol	[1]	4						
	(ii) Sulfuric acid	[1]							
	(iii) Toxic	[1]							
	(b) Correct symbol for explosive	[1]							
2	(a) Colour [1] beetroot [1] neutralisation [1]	[3]	6						
	(b) Acid [1] 12–14 (any value in range) [1] 8–11 (any value in range) [1]	[3]							
3	(a) Granite, slate, sandstone, limestone (reverse order [1])	[2]	5						
	(b) <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="padding: 5px;">Type of rock</th> <th style="padding: 5px;">Example</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">igneous [1]</td> <td style="padding: 5px;">granite</td> </tr> <tr> <td style="padding: 5px;">metamorphic</td> <td style="padding: 5px;">marble/slate [1]</td> </tr> <tr> <td style="padding: 5px;">sedimentary [1]</td> <td style="padding: 5px;">limestone</td> </tr> </tbody> </table>	Type of rock		Example	igneous [1]	granite	metamorphic	marble/slate [1]	sedimentary [1]
Type of rock	Example								
igneous [1]	granite								
metamorphic	marble/slate [1]								
sedimentary [1]	limestone								
4	(a) Both labels correct	[1]	5						
	(b) (i) 6000 (96 800 – total calculated [1])	[2]							
	(ii) 3200	[1]							
	(c) Landfill sites are becoming full/qualified pollution (air, ground)	[1]							
5	(a) A material that changes its properties [1] (or two properties described) as a result of its surroundings [1] (or described with two conditions)	[2]	5						
	(b) 10^{-9} m	[1]							
	(c) Wound dressings/kill bacteria/sterilising sprays	[1]							
	(d) Possible side effects/toxic/harmful to humans/scientists feel more research is needed/allergic	[1]							

			AVAILABLE MARKS		
6	(a)	Same amount of metal/same temperature of water	[1]	4	
	(b)	There would be no more bubbles/metal disappeared	[1]		
	(c)	As you go down Group One the reaction is faster	[1]		
	(d)	Small amount of metal/safety screen/handle metal using tongs/ large amount of water/glass cover/fume cupboard (do not allow: glove; board; reference to cloths; stand well back)	[1]		
7	(a)	Strong [1] cheap [1] penalise: m.p./density	[2]	6	
	(b)	Gold is very dense/heavy[1] wires may break/too heavy for pylons [1] independent marks	[2]		
	(c)	Aluminium [1] low density [1] penalise reference to other reasons (ignore cost)	[2]		
8	(a)	X placed in correct position (Group 7)	[1]	6	
	(b)	(i)	D/argon		[1]
		(ii)	A		[1]
	(c)	18	[1]		
	(d)	Octaves [1] Mendeleev [1]	[2]		
9	(a)	(i)	Copper [1] water [1] (either order)	[2]	6
		(ii)	Reduction (accept REDOX)	[1]	
	(b)	Y [1] the diagram shows two of the same type of atom joined together [1]	[2]		
	(c)	6	[1]		

- 10 (a) Bone **combines** two or more materials [1]
 reference to properties/reference to hard & flexible [1]
 more useful/better material/for a particular property/purpose [1] [3]

(b) (i)

Element	Number of protons	Number of neutrons
Phosphorus	15 [1]	16
Oxygen	8	8 [1]

[2]

- (ii) zero/ $\frac{1}{1840}$ [1] or range $\frac{1}{1800} \rightarrow \frac{1}{2000}$

-1 [1]

[2]

AVAILABLE
MARKS

7

11 Indicative Content:

Method

- use a **flame test** rod/nichrome wire
- dip into (concentrated) acid
- dip into the metal salt
- place into **blue** Bunsen flame
- clean the rod/use new rod

or

- use a spray bottle
- make a solution of the salt/add water
- spray into flame
- use blue Bunsen flame
- clean bottle/use a new bottle

Results

- copper – blue-green
- lithium – red

[6]

Band	Response	Mark
A	Candidates must use appropriate specialist terms throughout to describe carrying out a flame test using five to seven of the points above, in a logical sequence including at least one result. 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 carrying out a flame test using three or four 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 carrying out a flame test using one or two 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]

Total

AVAILABLE
MARKS

6

60

