



*Rewarding Learning*

**General Certificate of Secondary Education  
2015**

---

**Double Award Science: Chemistry**

Unit C2

Foundation Tier

**[GSD51]**

**TUESDAY 9 JUNE 2015, AFTERNOON**

---

**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) coal [1] oil [1] peat [1] [3]
- (b) oxygen [1] energy [1] [2]
- (c) (i) Any **two** of:  
 Smoke/gas given off  
 (carbon) sparks  
 glows/bright light/orange-yellow flame/bright flame  
 heat given off  
**Not** white light; **not** pungent smell; **not** bubbles; **not** fizzing; **not** just flame  
 or other correct  
 e.g. carbon disappears  
 2 × [1] [2]
- (ii) Carbon dioxide [1]
- (iii) Copper (II) oxide **or** copper oxide [1]  
 orange/pink/red-brown **or** similar (accept brown) [1] to black [1]  
**Allow** 'copper coloured'; **not** 'copper'; **not** red [3]

AVAILABLE  
MARKS

11

2 (a)

Water sample	Soap added and shaken		Detergent added and shaken	
	lather	no lather	lather	no lather
hard water		✓ [1]	✓ [1]	
soft water	✓ [1]		✓	

[3]

- (b) Advantages  
 Any **two** of:  
 Water tastes better  
 Good for bones and teeth  
 Prevent heart disease  
 Brewing of beer  
**Not** contains calcium ions  
 or other correct 2 × [1]
- Disadvantages  
 Any **two** of:  
 Wastes soap  
 Causes scum when it (hard water) reacts with soap  
 Causes fur in kettles  
 Limescale in hot water pipes  
**Allow** cost if correctly linked  
**Not** just 'fur', 'scale', 'scum' – must be link  
 or other correct 2 × [1] [4]

7



5 (a) Indicative Points

AVAILABLE  
MARKS

**Similarities**

All three gases are:

- colourless
  - odourless
  - not toxic
  - tasteless
  - all found in the atmosphere/air
- any other correct (for all three gases)

maximum 2 indicative points for similarities

**Testing**

- idea of testing in logical order, e.g. take **a** jar (not **the** gas jar) and test all three
- use a glowing splint/lit splint
- result: it relights/burns more brightly with oxygen
- add limewater
- result: it turns milky with carbon dioxide
- nitrogen identified by elimination

N.B. indicative points for results are dependent on correct tests

Response	Marks
Candidates must use specialist terms throughout to plan the experiment (7–8 indicative points required including the idea of testing in order). They use good spelling, punctuation and grammar and the form and style are of a high standard.	5–6
Candidates use some specialist terms to plan the experiment (4 to 6 indicative points required). They use satisfactory spelling, punctuation and grammar and the form and style are of a satisfactory standard.	3–4
Candidates give 1–3 of the indicative points but not necessarily in a logical sequence. They use limited spelling, punctuation and grammar and they have made little use of specialist terms.	1–2
Response not worthy of credit.	0

- (b) idea of (intense) volcanic activity [1]  
which released gases into the atmosphere [1]

N.B. For any credit volcanoes must be mentioned

Credit release of gases unless wrongly qualified, e.g. toxic, dangerous, SO<sub>2</sub>

- (c) (i) oxygen

- (ii) argon

[6]

[2]

[1]

[1]

10

			AVAILABLE MARKS	
6	(a) (i)	C	[1]	
	(ii)	Let 3 nails remain for same time/same size of nail/same temperature/ same <u>type</u> of nail/same size of test tube <b>Ignore</b> 'bung' or idea of 'control'	[1]	
	(iii)	To remove air or oxygen	[1]	
	(iv)	Air/oxygen and water/moisture/dampness/wetness	[1]	
	(b) (i)	Magnesium oxide [1] Hydrogen [1]	[2]	
	(ii)	Solid goes (from grey) to white or solid glows brightly <b>Allow</b> white light; <b>not</b> white flame	[1]	
	(c) (i)	Any <b>two</b> of: (Blue) solution goes colourless or fades Magnesium dissolves/disappears Reddish-brown/pink/brown/orange/copper coloured <b>Not</b> heat produced <b>Not</b> red; <b>not</b> 'copper' Or other correct – 2 × [1]	[2]	
	(ii)	Magnesium is more reactive (than copper) or vice-versa <b>Not</b> faster	[1]	
	(d) (i)	it continues to glow [1] idea that a grey or black solid ( <b>not</b> powder) is formed [1] <b>Allow</b> idea of turning grey or black unless wrongly qualified; <b>not</b> 'soot'; <b>not</b> 'powder' <b>Not</b> pungent smell	[2]	
	(ii)	Fe + S → FeS LHS [1]      RHS [1] If balancing wrong but formulae <b>all</b> correct award [1]	[2]	14
7	(a)	Average mass of an <b>atom</b> (of an element) [1] compared with that of a carbon-12 (isotope) [1] which has mass of exactly (clearly implied) 12 [1]	[3]	
	(b) (i)	sulfur dioxide                      64	[1]	
	(ii)	sodium sulfate                      142	[1]	
	(iii)	aluminium hydroxide              78	[1]	
	(c) (i)	2	[1]	
	(ii)	51 g	[1]	8

