



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

---

**Science: Single Award**

Unit 2 (Chemistry)

Foundation Tier

**[GSS21]**

**THURSDAY 22 FEBRUARY 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.

|   |   | AVAILABLE MARKS |
|---|---|-----------------|
| 1 | (a) Hazard symbol   | Name            |
|   |  | toxic           |
|   |  | corrosive       |
|   |  | explosive       |
|   |   | flammable       |
|   |   | [2]             |
|   | (b) The acid will burn the skin.  | [1]             |
|   |   | 3               |
| 2 | (a) (i) Whorl   | [1]             |
|   | (ii) Loop   | [1]             |
|   | (b) White [1]<br>unique [1]   | [2]             |
|   | (c) (i) Nylon and wool  | [1]             |
|   | (ii) It could be <b>matched</b> to a suspect's hair                               | [1]             |
|   |   | 6               |
| 3 | (a) Metal [1]<br>plastic [1]  | [2]             |
|   | (b) Saves natural resources/reduce landfill/saves energy                          | [1]             |
|   | (c) (i) Remoulded   | [1]             |
|   | (ii) <b>Small</b> pieces of (broken) glass  | [1]             |
|   |   | 5               |
| 4 | (a) Crust   | [1]             |
|   | (b) Solid and molten rock   | [1]             |
|   | (c) Granite/basalt [1]<br>sedimentary [1]   | [2]             |
|   | (d) (i) 3, 1, 2, 4<br>(any two in the correct order [1])                          | [2]             |
|   | (ii) Richter  | [1]             |
|   |   | 7               |

- 5 (a) A chemical/dye that **changes colour** [1] when in an acid or alkali [1] [2]
- (b) Add water/crush berries [1]  
heat/boil/leave to stand [1]  
remove the berries/use the liquid as the indicator [1] [3]
- (c)
- | Substance   | Colour of blueberry indicator |
|-------------|-------------------------------|
| weak acid   | purple [1]                    |
| strong acid | red [1]                       |
| neutral     | green                         |
- [2]
- (d) It is the same colour (in alkali and neutral solutions) [1]
- (e) More accurate [1]
- 6 (a) A [1]
- (b) It is temporary hard water [1]  
there was **no lather before** boiling but there **was lather after boiling** [1] [2]
- (c) Any **two** from:  
  - same volume of water
  - same length of time of shaking
  - same volume of soap solution
[2]
- (d) Calcium/magnesium [1]
- (e) Three [1]
- 7 (a) Y, Z, X [1]
- (b) Sodium [1]
- (c) Hydrogen [1]
- (d) Oxidation [1]
- 8 (a) F and Cl (either order) [1]
- (b) O [1]
- (c) Ca [1]
- (d) He/O/F/Cl/Ne [1]
- (e) Five [1]

AVAILABLE  
MARKS

9

7

4

5

- 9 (a) All points plotted correctly [2] (6 points plotted correctly [1]) correct curve [1] [3]
- (b) As the time increases, the volume of gas increases [1] at 40 s/48 cm<sup>3</sup> the graph levels off [1] [2]
- (c) (i) Limewater [1] [1]
- (ii) From colourless [1] to cloudy [1] [2]

10 Indicative content

- safety goggles
- safety screen/fume cupboard
- (large) trough of water
- small piece of metal
- use tongs
- two similarities from: vigorous reaction/metal floats/moves on surface/metal disappears/gas given off/heat produced/forms a colourless solution
- difference: potassium burns with a **lilac** flame/potassium is **more** vigorous/potassium melts and lithium doesn't

| Band | Response  | Mark    |
|------|---|---------|
| A    | Candidates must use appropriate specialist terms throughout to describe the reaction of alkali metals with water using <b>six to eight</b> of the points above, in a logical sequence including two similarities and one difference in observations. 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 the reaction of alkali metals with water using <b>four to five</b> 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 the reaction of alkali metals with water using <b>one to three</b> 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

8

6

**60**