



Rewarding Learning

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

**Double Award Science:
Chemistry**

Unit C2

Foundation Tier

[GSD51]

TUESDAY 13 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.

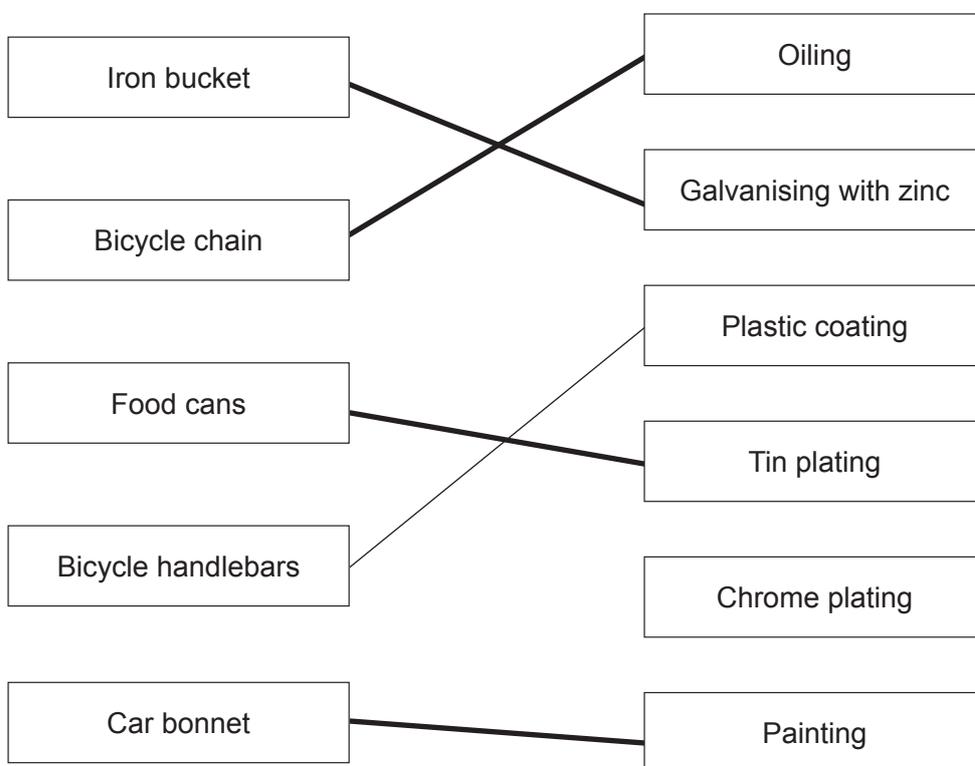
- 1 (a) oxygen [1]
hydrogen [1]
oxidation [1] [3]

(b)

Description of reaction	Oxidation	Reduction
Burning coal on a fire	✓ [1]	
An iron bridge rusting	✓ [1]	
The reaction of copper(II) oxide with hydrogen		✓ [1]

[3]

- (c)
- | Object | Method of rust prevention |
|--------|---------------------------|
|--------|---------------------------|



1 mark for each correct line 4 × [1]

[4]

AVAILABLE
MARKS

10

- 2 (a) decrease [1]
 increase [1]
 increase [1]
 none [1] [4]
- (b) the speed at which the reaction happens [1]
- (c) idea that: it doesn't get used up [1]
- (d) (i) $35 \text{ cm}^3 \pm 1$ units essential [1]
- (ii) 160 accept 157–160 [1]
- (iii) graph starts at origin and is steeper [1]
 Curve levels off at 60 cm^3 [1] [2]

AVAILABLE
MARKS

10

- 3 (a) (i)
- | Process | Exothermic or Endothermic |
|-------------------------------|---------------------------|
| photosynthesis | endothermic |
| burning wood | exothermic [1] |
| melting ice cubes | endothermic [1] |
| neutralising acid with alkali | exothermic [1] |
| making chemical bonds | exothermic [1] |
- [4]
- (ii) thermal [1]
 decomposition [1] [2]

(b) Advantages

- Cheap source of limestone
- Provides jobs (for locals)
- Good for local economy
- Disused quarry can be used for landfill
- Helps road infrastructure for transporting limestone
- Or other correct

Do not allow answers linked to use.

Allow maximum of **four** indicative points for advantages.

Disadvantages

- Noisy machinery
- Unsightly
- Destruction of habitats
- Fumes from machinery and heavy lorries/dust pollution
- Idea of traffic congestion
- Idea of harming tourism
- Or other correct

Not just air pollution.

Allow maximum of **four** indicative points for disadvantages.

Band	Response	Mark
A	Candidates make correct reference to 6–8 of the indicative points shown. They use good spelling, punctuation and grammar and the form and style are of a high standard.	[5]–[6]
B	Candidates make correct reference to 4–5 of the indicative points shown. They use satisfactory spelling, punctuation and grammar and the form and style are of a satisfactory standard.	[3]–[4]
C	Candidates make correct reference to 2–3 of the indicative points shown. The form and style is of a limited standard.	[1]–[2]
D	Response not worthy of credit.	[0]

[6]

12

AVAILABLE
MARKS

		AVAILABLE MARKS
6	(a) Ca^{2+} [1] Mg^{2+} [1]	[2]
	(b) hard water – lather [1] soft water – lather [1]	[2]
	(c) (i) Add soap solution (and shake) a lather forms [1]	[2]
	(ii) Boil the sample [1] then add soap [1] temporary hard water will lather with soap [1] this mark depends on the first mark	[3]
7	(a) (i) 30	[1]
	(ii) 170	[1]
	(iii) 132	[1]
	(b) The relative formula mass (of the substance) [1] in grams [1] second mark dependent on first	[2]
	(c) (i) 40.8	[1]
	(ii) 2.5	[1]
	(iii) 1000	[1]
8	(a) (i) Any two from: • Colourless • Odourless • Tasteless • Insoluble/sparingly soluble in water • or other correct 2 × [1]	[2]
	(ii) As a coolant/in food packaging or other correct	[1]
	(b) (i) iron	[1]
	(ii) Any answer in range 350–500 °C	[1]
	(iii) Any two from: • Manufacture of fertilisers • Manufacture of nitric acid/explosives • Manufacture of nylon • Ingredient in cleaning fuels • or other correct 2 × [1]	[2]
		9
		8
		7

