

# GCSE SCIENCE B

SCB2FP - Unit 2 My Family and Home Mark scheme

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Version: 1.0 Final

Mark schemes are prepared by the Lead Assessment Writer and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation events which all associates participate in and is the scheme which was used by them in this examination. The standardisation process ensures that the mark scheme covers the students' responses to questions and that every associate understands and applies it in the same correct way. As preparation for standardisation each associate analyses a number of students' scripts: alternative answers not already covered by the mark scheme are discussed and legislated for. If, after the standardisation process, associates encounter unusual answers which have not been raised they are required to refer these to the Lead Assessment Writer.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of students' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

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## Information to Examiners

### 1. General

The mark scheme for each question shows:

- the marks available for each part of the question
- the total marks available for the question
- the typical answer or answers which are expected
- extra information to help the Examiner make his or her judgement and help to delineate what is acceptable or not worthy of credit or, in discursive answers, to give an overview of the area in which a mark or marks may be awarded.

The extra information is aligned to the appropriate answer in the left-hand part of the mark scheme and should only be applied to that item in the mark scheme.

At the beginning of a part of a question a reminder may be given, for example: where consequential marking needs to be considered in a calculation; or the answer may be on the diagram or at a different place on the script.

In general the right-hand side of the mark scheme is there to provide those extra details which confuse the main part of the mark scheme yet may be helpful in ensuring that marking is straightforward and consistent.

### 2. Emboldening

- **2.1** In a list of acceptable answers where more than one mark is available 'any **two** from' is used, with the number of marks emboldened. Each of the following bullet points is a potential mark.
- **2.2** A bold **and** is used to indicate that both parts of the answer are required to award the mark.
- **2.3** Alternative answers acceptable for a mark are indicated by the use of **or**. Different terms in the mark scheme are shown by a / ; e.g. allow smooth / free movement.

### 3. Marking points

### 3.1 Marking of lists

This applies to questions requiring a set number of responses, but for which students have provided extra responses. The general principle to be followed in such a situation is that 'right + wrong = wrong'.

Each error / contradiction negates each correct response. So, if the number of error / contradictions equals or exceeds the number of marks available for the question, no marks can be awarded.

However, responses considered to be neutral (indicated as \* in example 1) are not penalised.

Example 1: What is the pH of an acidic solution? (1 mark)

Student	Response	Marks
		awarded
1	green, 5	0
2	red*, 5	1
3	red*, 8	0

Example 2: Name two planets in the solar system. (2 marks)

Student	Response	Marks awarded
1	Neptune, Mars, Moon	1
2	Neptune, Sun, Mars,	0
	Moon	

### 3.2 Use of chemical symbols / formulae

If a student writes a chemical symbol / formula instead of a required chemical name, full credit can be given if the symbol / formula is correct and if, in the context of the question, such action is appropriate.

#### 3.3 Marking procedure for calculations

Full marks can be given for a correct numerical answer, without any working shown.

However, if the answer is incorrect, mark(s) can be gained by correct substitution / working and this is shown in the 'extra information' column or by each stage of a longer calculation.

#### 3.4 Interpretation of 'it'

Answers using the word 'it' should be given credit only if it is clear that the 'it' refers to the correct subject.

#### 3.5 Errors carried forward

Any error in the answers to a structured question should be penalised once only.

Papers should be constructed in such a way that the number of times errors can be carried forward are kept to a minimum. Allowances for errors carried forward are most likely to be restricted to calculation questions and should be shown by the abbreviation e.c.f. in the marking scheme.

## 3.6 Phonetic spelling

The phonetic spelling of correct scientific terminology should be credited **unless** there is a possible confusion with another technical term.

### 3.7 Brackets

(....) are used to indicate information which is not essential for the mark to be awarded but is included to help the examiner identify the sense of the answer required.

## 3.8 Ignore / Insufficient / Do <u>not</u> allow

Ignore or insufficient is used when the information given is irrelevant to the question or not enough to gain the marking point. Any further correct amplification could gain the marking point.

Do **not** allow means that this is a wrong answer which, even if the correct answer is given, will still mean that the mark is not awarded.

# **Quality of Written Communication and levels marking**

In Question 7(c) students are required to produce extended written material in English, and will be assessed on the quality of their written communication as well as the standard of the scientific response.

Students will be required to:

- use good English
- organise information clearly
- use specialist vocabulary where appropriate.

The following general criteria should be used to assign marks to a level:

#### Level 1: basic

- Knowledge of basic information
- Simple understanding
- The answer is poorly organised, with almost no specialist terms and their use demonstrating a general lack of understanding of their meaning, little or no detail
- The spelling, punctuation and grammar are very weak.

#### Level 2: clear

- Knowledge of accurate information
- Clear understanding
- The answer has some structure and organisation, use of specialist terms has been attempted but not always accurately, some detail is given
- There is reasonable accuracy in spelling, punctuation and grammar, although there may still be some errors.

#### Level 3: detailed

- Knowledge of accurate information appropriately contextualised
- Detailed understanding, supported by relevant evidence and examples
- Answer is coherent and in an organised, logical sequence, containing a wide range of appropriate or relevant specialist terms used accurately.
- The answer shows almost faultless spelling, punctuation and grammar.

Question	Answers		rs	Extra information	Mark	AO and Spec Ref
1 (a)	(the) n	ucleus		accept phonetic spelling	1	AO1
						3.4.1.3.2
1 (b(i)	(a) chr	omosome		accept phonetic spelling	1	AO1
						3.4.1.3.2
1 (b)(ii)	(a) ger	ne		accept phonetic spelling	1	AO1
						3.4.1.3.2
1 (c)(i)						AO2
		Н	h			3.4.1.3.5
	н	нн	Hh	HH correct	1	
	h	IJЬ	hh	both Hh or hH correct	1	
		nıı		hh	1	
1 (c)(ii)	0.75 <b>o</b>	r ¾ or 75%		accept 3 out of 4 <b>or</b> 3:1	1	AO3
				do not accept 1:3 or 3:4		3.4.1.3.5
				allow ecf from 1(c)(i)		
Total					7	

Question	Answers	Extra information	Mark	AO and Spec Ref
2 (a) (i)	reflex action		1	AO1
				3.4.1.1.3
2 (a) (ii)	A sensory neurone		1	AO1
				3.4.1.1.2,4
	B motor neurone		1	
	<b>C</b> muscle		1	
2 (a) (iii)	heat <b>or</b> hot toast		1	AO2
				3.4.1.1.3
Total	-		5	

Question	Answers	Extra information	Mark	AO and Spec Ref
3 (a)(i)	homeostasis		1	<b>AO1</b> 3.4.1.1.7
3 (a)(ii)	evaporation		1	<b>AO1</b> 3.4.1.1.11a
3 (a)(iii)	dilate		1	<b>AO1</b> 3.4.1.1.11b
3 (a)(iv)	decrease		1	<b>AO1</b> 3.4.1.1.11c
Total			4	]

Question	Answers	Extra information	Mark	AO and Spec Ref
4 (a)	a more efficient light bulb would waste less energy than a filament light bulb	first box ticked <b>only</b>	1	<b>AO1</b> 3.4.3.1.8
4 (b)(i)	thermal / heat	ignore sound	1	<b>AO2</b> 3.4.3.1.7
4 (b)(ii)	0.9(0)	do <b>not</b> accept rounding	1	<b>AO2</b> 3.4.3.1.7
4 (b)(iii)	0.1 or 10% if using value of 2 J: 0.2(2) or 20%	correct answer with or without working gains <b>2</b> marks if answer incorrect, allow evidence of division by 9.0 for <b>1</b> mark correct answer with incorrect unit max. <b>1</b> mark allow ecf from their answer to <b>4(b)(ii)</b>	2	<b>AO2</b> 3.4.3.1.9
4 (b)(iv)	LED (because) highest efficiency <b>or</b> most efficient <b>or</b> less money on electricity <b>or</b> lower electricity bills	allow compact bulb chosen by ecf from <b>4(b)(iii)</b> if filament bulb chosen: <b>0</b> marks accept wastes less energy	1	<b>AO3</b> 3.4.3.1.9
4 (c)	(because) mercury will escape into the environment	accept ideas relating to pollution 'it' = mercury	1	<b>AO3</b> 3.4.3.2.6
Total			8	

Question	Answers	Extra information	Mark	AO and Spec Ref
5 (a)	Gamma rays Microwaves Visible light TV remote control	1 mark for each correct link extra lines from type of radiation negates the mark	3	AO1 3.4.3.2.6a/ b/d
5 (b)	waves hertz / Hz high	ignore transverse do <b>not</b> accept longitudinal accept waves per second	1 1 1	<b>AO1</b> 3.4.3.1/2/4
5 (c)(i)	<ul> <li>any one from:</li> <li>improves skin condition or reduces symptoms</li> <li>social issues including less bullying</li> <li>don't have to take drugs</li> </ul>		1	<b>AO3</b> 3.4.3.2.6e
5(c)(ii)	any <b>two</b> from: • <u>skin</u> cancer • sunburn • premature ageing	allow damage to the skin as an alternative to sunburn or premature aging ignore cost	2	<b>AO3</b> 3.4.3.2.6e
Total			9	

Question	Answers	Extra information	Mark	AO and Spec Ref
6 (a)	any <b>one</b> from:		1	AO3
	<ul> <li>eating too much or too fast</li> </ul>			3.4.1.2.7
	<ul> <li>eating fatty or acidic foods</li> </ul>			
	<ul> <li>smoking</li> </ul>			
	drinking alcohol			
	<ul> <li>pregnancy</li> </ul>			
	stress			
	tiredness			
6 (b)	water	either order	1	AO1/AO2
	magnesium chloride		1	3.4.1.2.7
6 (c)(i)	either			AO2
	any <b>two</b> from:		2	3.4.1.2.4
	<ul> <li>pH stays the same (at 2) when easy relief added</li> </ul>	accept easy relief doesn't neutralise the antacid compound		
	<ul> <li>quik-ease increases the pH (to 3)</li> </ul>	do <b>not</b> accept decreases		
	<ul> <li>rapid relief increases the pH (to 5)</li> </ul>	do <b>not</b> accept decreases		
	<b>or</b> (if no mention of change in pH)			
	correct quotation of two figures from bar chart for <b>1</b> mark <b>or</b> correct quotation of three figures from bar chart for <b>2</b> marks			

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Question 6 continues on the next page

# **Question 6 continued**

Question	Answers	Extra information	Mark	AO and Spec Ref
6 (c)(ii)	rapid relief		1	<b>AO3</b> 3.4.1.2.4
6 (d)	doesn't have to dissolve	accept large surface area	1	<b>AO3</b> 3.4.1.2.7
Total			7	]

Question		Answers		Extra information		Mark	AO and Spec Ref
7 (a)	oxygen water (va	pour)	lef allo rig allo allo	t-hand side ow $O_2$ ht-hand side ow $H_2O$ ow $OH_2$		1 1	<b>AO2</b> 3.4.2.2.4
7 (b)	cannot be up	e replaced once used	igr	nore can be used once		1	<b>AO1</b> 3.4.2.3.1
7 (c)						6	<b>AO1/AO2</b> 3.4.2.3.6
Marks awarded for this answer will be determined by the Quality of Written Communication (QWC) as well as the standard of the scientific response. Examiners should also refer to the information on page 5 and apply a 'best-fit' approach to the marking.						ation (QWC) Iformation on	
0 ma	rks	Level 1 (1–2 marks	s)	Level 2 (3–4 marks)	Level 3 (5–6 marks)		
no relevant content at least one part correctly named <b>or</b> a process identified			at least one part correctly named <b>and</b> a process described correctly	a correct sequence given, in which most parts are correctly named and some are correctly linked to a description of the appropriate processes			
examples or response	of the poin	ts made in the	e	extra information			
<ul> <li>(part A) – fuel rods / (nuclear) fuel / (nuclear) reactor / core / control rod</li> <li>fuel undergoes fission</li> <li>fission releases heat / energy</li> <li>(part B) – boiler / heat exchanger</li> <li>heat used in the boiler</li> <li>water into steam</li> <li>(part C) – turbine</li> <li>steam turns turbine</li> <li>(part D) – generator</li> <li>turbine turns generator</li> <li>generator produces electricity</li> </ul>			)				
Total						9	

Question	Answers	Extra information	Mark	AO and Spec Ref
8 (a)	(a large number of) monomers <b>or</b> small molecules		1	<b>AO1</b> 3.4.2.1.9
	polymerisation <b>or</b> joined together		1	
	to form a polymer <b>or</b> long molecule		1	
8 (b)	any <b>two</b> from:	accept converse for steel	2	AO2
	• cheap <u>er</u>			3.4.2.1.10
	does not corrode			
	<ul> <li>eas<u>ier</u> to mould</li> </ul>			
	<ul> <li>does not conduct heat <u>as</u> readily</li> </ul>			
	• light <u>er</u>			
8 (c)(i)	any one from:		1	AO1
	• it is brittle			3.4.2.1.11
	<ul> <li>high melting point</li> </ul>			
	hard			
	<ul> <li>resistant to chemical attack</li> </ul>			
	hard wearing	accept insulator		
8 (c)(ii)	limestone is heated (with)		1	AO1
	sand and sodium carbonate	accept soda for sodium carbonate	1	3.4.2.1.4
8(d)(i)	sand	all four correct for 2 marks	2	AO1
	gravel	any <b>two</b> correct for <b>1</b> mark		3.4.2.1.5
	cement	allow hard core for gravel		
	water	ignore clay		

# Question 8 continues on the next page

# **Question 8 continued**

Question	Answers	Extra information	Mark	AO and Spec Ref
8(d)(ii)	<ul><li>any one from:</li><li>to add strength</li><li>to add flexibility</li></ul>		1	<b>AO3</b> 3.4.2.1.13
Total			11	]