



**GCSE Science B
(Science in Context)**

Higher Tier

Science B 2H

SPECIMEN MARK SCHEME

Version 1.0

Quality of Written Communication and levels marking

In Question 5(b) candidates 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.

Candidates 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.

In order to attain a mark within a certain level, **both** the science **and** the QWC must be of a standard appropriate to that level.

COMPONENT NUMBER: GCSE Science B (Science in Context) 2H

COMPONENT NAME: My Family and Home

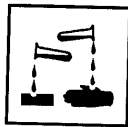
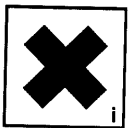
STATUS: Specimen Version 1.0

question	answer	extra information	mark
1(a)(i)	infrared		1
1(a)(ii)	(visible) light		1
1(b)	frequency		1
1(c)	infrared		1
	visible light		1
	ultra violet		1
	X-rays		1
Total			7

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question	answer	extra information	mark
2(a)	 	must have both correct for the mark	1
2(b)	form of eye protection – safety specs / goggles / visor form of skin protection – gloves		1 1
2(c)(i)	(optimum pH) for stomach enzymes to work	allow acids help to break down food	1
2(c)(ii)	salt water	either order	1 1
2(d)(i)	(put probe in acid) add alkali <u>slowly</u> until meter reads 7		1 1
2(d)(ii)	hydrogen	accept H or H ⁺	1
Total			9

COMPONENT NUMBER: GCSE Science B (Science in Context) 2H**COMPONENT NAME: My Family and Home****STATUS: Specimen Version 1.0**

question	answer	extra information	mark
3(a)	higher frequency		1
	so more energy		1
3(b)	any three from: <ul style="list-style-type: none">not properly informed about the dangersradiation may prove dangerous in the long term or not been tested for long enoughscientists are uncertain about the damage caused by radiationscientists need to carry out more testsmicrowave radiation causes heatingchildren are more likely to be damaged by radiation	accept children close to the mast will get constant high-level radiation	3
3(c)	keep all masts at least 400 m from schools		1
	(gain confidence of parents by) getting experts to explain why the masts are safe		1
Total			7

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question	answer	extra information	mark																
4(a)	A – chromosome B – gene	accept allele	1 1																
4(b)(i)	<table style="margin-left: auto; margin-right: auto;"> <tr> <td></td> <td colspan="2" style="text-align: center;">mother</td> <td></td> </tr> <tr> <td></td> <td style="border: 1px solid black; text-align: center;">A</td> <td style="border: 1px solid black; text-align: center;">a</td> <td></td> </tr> <tr> <td style="border: 1px solid black; text-align: center;">A</td> <td style="border: 1px solid black; text-align: center;">AA</td> <td style="border: 1px solid black; text-align: center;">Aa</td> <td></td> </tr> <tr> <td style="border: 1px solid black; text-align: center;">a</td> <td style="border: 1px solid black; text-align: center;">aA</td> <td style="border: 1px solid black; text-align: center;">aa</td> <td style="text-align: right;">←</td> </tr> </table>		mother				A	a		A	AA	Aa		a	aA	aa	←	mother's alleles correct father's alleles correct all correct crosses affected child indicated if parents not identified accept both sets of parental alleles correct (Aa and Aa) for 1 mark	1 1 1 1
	mother																		
	A	a																	
A	AA	Aa																	
a	aA	aa	←																
4(b)(ii)	25% or 0.25 or ¼		1																
Total			7																

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question	answer	extra information	mark
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5(a)	pancreas detects rise in glucose in the bloodstream		1
	pancreas makes insulin		1
	insulin released into bloodstream		1
	insulin causes liver to remove glucose from the bloodstream		1
	glucose converted to glycogen in liver / muscle		1

5(b)

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 2.

0 marks	Level 1 (1–2 marks)	Level 2 (3–4 marks)	Level 3 (5–6 marks)
No relevant content.	There is a brief description of the way the body temperature is regulated using negative feedback.	There is a description of the way the body temperature is regulated using negative feedback.	There is a clear, balanced and detailed description of the way the body temperature is regulated using negative feedback.

<p>examples of the points made in the response</p> <ul style="list-style-type: none"> • thermoregulatory centre in brain • detects rise in blood temperature • causes dilation of blood vessels supplying the skin • more blood to surface (capillaries) • more heat lost by radiation • more sweating / evaporative cooling • restores normal body temperature 	<p>extra information</p> <p>do not accept capillaries</p>
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Total		11
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question	answer	extra information	mark
6(a)(i)	22 (J/s)		1
6(a)(ii)	56(%)	correct answer if answer incorrect 0.56 or $28/50 \times 100$ or $14/25 \times 100$ or $(50 - \text{their } 6\text{aii})/50 \times 100$ gains 1 mark	2
6(a)(iii)	more efficient, so less energy / electricity needed less fuel burned so less CO ₂ produced	accept reference to reduced global warming or reduction in greenhouse effect	1 1
6(b)	energy = power × time power = 0.85 kW, time = 0.1 energy = 0.085 kWh	accept $850 \times 6 = 5100$ for 1 mark accept $850 \times 0.1 = 85$ or $0.85 \times 6 = 5.1$ for 2 marks accept 85 Wh for max 3 marks If answer given in joules, accept $850 \times 60 \times 6$ (1) or 850×360 (1) = 306 000 (1) or 306 (1) J (1) or kJ(1)	1 1 1 1
Total			9

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question	answer	extra information	mark
7(a)(i)	butane		1
7(a)(ii)	because there are weak forces (of attraction) between molecules	not weak bonds	1
	less energy needed (to boil)		1
7(b)	C ₇ H ₁₆		1
7(c)	<u>butane</u> is more volatile or lower boiling point or is easier to ignite	ignore reference to melting point	1
	or <u>hexane</u> is less volatile or higher boiling point or is harder to ignite because fuel needs to be more volatile or turn to gas easier or ignites more easily in cold weather		1
7(d)(i)	$C_6H_{14} + 9\frac{1}{2}O_2 \rightarrow 6CO_2 + 7H_2O$	equation must be completely correct	1
7(d)(ii)	oxygen increases by 1 ½		1
	carbon dioxide increases by 1 and water increases by 1		1
7(e)	not enough oxygen		1
Total			10