



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

**Foundation Tier**

**Science B 3F**

**SPECIMEN MARK SCHEME**

**Version 1.0**

## Quality of Written Communication and levels marking

In Question 9(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) 3F****COMPONENT NAME: Making My World a Better Place****STATUS: Specimen Version 1.0**

<b>question</b>	<b>answer</b>	<b>extra information</b>	<b>mark</b>
<b>1(a)</b>	pollen		1
<b>1(b)</b>	a rash		1
<b>1(c)(i)</b>	irritant		1
<b>1(c)(ii)</b>	keep the room well ventilated		1
<b>1(d)</b>	incomplete combustion reduces the energy output		1
	the products of incomplete combustion can be toxic		1
<b>Total</b>			<b>6</b>

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<b>question</b>	<b>answer</b>	<b>extra information</b>	<b>mark</b>
<b>2(a)</b>	X-rays are used to diagnose broken bones		1
	X-rays are stopped by dense material		1
<b>2(b)</b>	photographic		1
<b>2(c)</b>	film badges		1
<b>Total</b>			<b>4</b>

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<b>question</b>	<b>answer</b>	<b>extra information</b>	<b>mark</b>
<b>3(a)(i)</b>	convection		1
<b>3(a)(ii)</b>	conduction		1
<b>3(b)</b>	35%		1
<b>3(c)</b>	(cavity) wall insulation roof insulation		1 1
<b>Total</b>			<b>5</b>

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<b>question</b>	<b>answer</b>	<b>extra information</b>	<b>mark</b>
<b>4</b>	thermochromic – easy to see if food's been too warm memory metal – can be put back into shape if damaged smart paint – prevents corrosion photochromic – don't need to buy separate sunglasses	accept rust accept repairs (small) scratches accept don't have to pay for resprays	1 1 1 1
<b>Total</b>			<b>4</b>

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question	answer	extra information	mark
<b>5(a)(i)</b>	nickel causes allergies	must have both for the mark	1
	silver is used because it does not cause allergies <b>and</b> is attractive		1
<b>5(a)(ii)</b>	steel corrodes	accept rusts	1
	tin is used because it is resistant to corrosion <b>and</b> is non-toxic	must have both for the mark	1
<b>5(b)(i)</b>	anode		1
<b>5(b)(ii)</b>	negative		1
<b>5(c)</b>	responses <b>must</b> refer to:	actual methods expressed will vary, but must <b>cover</b> these three areas	
	• avoiding contact with skin		1
	• avoiding inhalation		1
	• avoiding ingestion	1	
<b>Total</b>			<b>9</b>

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question	answer	extra information	mark
6(a)	a chemical / man-made substance that kills insects		1
6(b)	<b>two</b> from: <ul style="list-style-type: none"><li>pesticides may be harmful to useful insects as well as damaging pests</li><li>reduction of pollution in rivers etc by leaching</li><li>reduces likelihood of pests developing resistance to pesticides</li></ul>		2
6(c)	the transfer of 'foreign' genes into the cells of (cotton) plants (at an early stage in their development)	owtte	1
	so that they develop with desired characteristics	owtte ignore 'toxin'	1
6(d)	Bt toxins produced are poisonous and kill any insects eating the plant		1
	dead insects can't breed so fewer around to eat the cotton		1
<b>Total</b>			<b>7</b>



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<b>question</b>	<b>answer</b>	<b>extra information</b>	<b>mark</b>
<b>7(a)</b>	leaching	accept run-off	1
	oxygen		1
	eutrophication		1
<b>7(b)</b>	collect samples from stream at various points		1
	identify the organisms on the chart in each sample		1
	identify the least tolerant organism in the sample		1
	use the chart to find the highest level of pollution that the least tolerant organism can survive		1
<b>Total</b>			<b>7</b>

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<b>question</b>	<b>answer</b>	<b>extra information</b>	<b>mark</b>
<b>8(a)</b>	substance 1 – nicotine		1
	effect – causes addiction to smoking	accept has a vasoconstricting effect	1
	substance 2 – carbon monoxide		1
	effect – replaces oxygen in the bloodstream	accept for either: substance – tar effect – causes cancer	1
<b>8(b)(i)</b>	4000 – 2200		1
	= 1800		1
<b>8(b)(ii)</b>	when smoking goes up, cancer goes up		1
	when smoking goes down, cancer goes down		1
	there is a time lag of about 20 years		1
<b>Total</b>			<b>9</b>

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question	answer	extra information	mark
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<b>9(a)</b>	Disease	Caused by bacteria	Caused by viruses	All four for <b>3</b> marks two or three for <b>2</b> marks one for <b>1</b> mark	<b>3</b>
	Influenza		✓		
	Mumps		✓		
	Cholera	✓			
	Tuberculosis	✓			

**9(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.

<b>0 marks</b>	<b>Level 1 (1–2 marks)</b>	<b>Level 2 (3–4 marks)</b>	<b>Level 3 (5–6 marks)</b>
No relevant content.	There is a brief description of the process by which the human body develops immunity after vaccination.	There is a description of the process by which the human body develops immunity after vaccination.	There is a clear and detailed description of the process by which the human body develops immunity after vaccination.

<p><b>examples of the points made in the response</b></p> <ul style="list-style-type: none"> <li>• when a vaccination is given, dead or weakened pathogens are injected into the body</li> <li>• the white blood cells respond by producing antibodies</li> <li>• some of these white blood cells survive in the body</li> <li>• and act as ‘memory cells’</li> <li>• when the same pathogens enter the body again the white blood cells rapidly produce antibodies</li> <li>• which destroy the pathogen</li> <li>• this prevents illness developing.</li> </ul>	<b>extra information</b>
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<b>Total</b>			<b>9</b>
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