



**GCSE Science A 2**

**Foundation Tier**

**Unit 6F**

**SPECIMEN MARK SCHEME**

**Version 1.0**

## Quality of Written Communication and levels marking

In Question 13 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: SCA2FP**

**COMPONENT NAME: GCSE Science A 2 Unit 6F**

**STATUS: Specimen V1.0**

<b>question</b>	<b>answers</b>	<b>extra information</b>	<b>mark</b>
<b>1(a)(i)</b>	<b>D</b>		<b>1</b>
<b>1(a)(ii)</b>	<b>C</b>		<b>1</b>
<b>1(a)(iii)</b>	<b>B</b>		<b>1</b>
<b>1(b)</b>	parent		<b>1</b>
	gamete		<b>1</b>
	clone		<b>1</b>
<b>Total</b>			<b>6</b>

<b>question</b>	<b>answers</b>	<b>extra information</b>	<b>mark</b>
<b>2(a)</b>	sulfur dioxide		<b>1</b>
<b>2(b)(i)</b>	from the factory towards the east	extra boxes ticked cancels the mark	<b>1</b>
<b>2(b)(ii)</b>	tick in bottom row	extra boxes ticked cancels the mark	<b>1</b>
<b>Total</b>			<b>3</b>

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<b>question</b>	<b>answers</b>	<b>extra information</b>	<b>mark</b>
<b>3(a)</b>	actual number of korhaans is likely to be higher than estimate because the birds are not all visible from the road		1 1
<b>3(b)</b>	the number of korhaans went up and down, but there was an overall fall in numbers	extra boxes ticked cancels the mark	1
<b>3(c)</b>	the habitat of the korhaans is disappearing	extra boxes ticked cancels the mark	1
<b>Total</b>			<b>4</b>

<b>question</b>	<b>answers</b>	<b>extra information</b>	<b>mark</b>
<b>4(a)</b>	amphibians		1
<b>4(b)</b>	reptiles		1
<b>4(c)</b>	evolution	accept natural selection	1
<b>Total</b>			<b>3</b>

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<b>question</b>	<b>answers</b>	<b>extra information</b>	<b>mark</b>
<b>5</b>	(the layer of fat under the skin) insulates the penguin		1
	(the streamlined body) reduces resistance from water, enabling the penguin to swim faster to catch fish		1
	(the oily feathers) prevent cold water reaching skin		1
<b>Total</b>			<b>3</b>

<b>question</b>	<b>answers</b>	<b>extra information</b>	<b>mark</b>
<b>6(a)</b>	<b>D</b>	letters must be in the order shown	1
	<b>C</b>		1
	<b>A</b>		1
<b>6(b)(i)</b>	floats		1
<b>6(b)(ii)</b>	an emulsion		1
<b>6(c)</b>	water would make the thin slices of potato soft		1
	the thin slices of potato cook quicker		1
		extra boxes ticked cancels a mark	
<b>6(d)(i)</b>	sunflower		1
<b>6(d)(ii)</b>	(no) because corn oil has most saturated fat but a lower melting point than olive oil		1
<b>Total</b>			<b>9</b>

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question	answers	extra information	mark
7(a)(i)	carbon dioxide		1
7(a)(ii)	because water boils at 100°C and the temperature on Venus is 460°C therefore any water on the surface would boil to form steam / water vapour / gas		1  1
7(b)	any <b>three</b> from: <ul style="list-style-type: none"><li>• by photosynthesis</li><li>• by dissolving in oceans</li><li>• by the formation of (calcium) carbonate <b>or</b> limestone</li><li>• by the formation of oil <b>or</b> coal</li></ul>	accept by the formation of fossil fuels	3
7(c)(i)	0.0317 (%)		1
7(c)(ii)	the percentage of carbon dioxide has increased		1
7(c)(iii)	any <b>one</b> from: <ul style="list-style-type: none"><li>• burning of fossil fuels</li><li>• deforestation</li><li>• release of 'locked up' carbon dioxide</li></ul>		1
<b>Total</b>			<b>9</b>

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<b>question</b>	<b>answers</b>	<b>extra information</b>	<b>mark</b>
<b>8(a)</b>	Mountainous region – falling water (hydroelectric)		1
	Coastal region – waves		1
	Volcanic region – geothermal		1
	River estuary – tides		1
<b>8(b)</b>	boiler		1
	generator		1
<b>8(c)</b>	decrease		1
<b>8(d)</b>	any named biofuel eg wood, ethanol, straw		1
<b>Total</b>			<b>8</b>

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question	answers	extra information	mark
<b>9(a)(i)</b>	oscillation	correct order only	1
	direction		1
<b>9(a)(ii)</b>	sound		1
<b>9(b)</b>	1.6	allow <b>1</b> mark for correct substitution into correct equation ie $2 \times 0.8$	2
	m/s		1
<b>9(c)</b>	as the wavelength increases so does the wave speed		1
	extra information, eg wave speed increases faster between 0-40 m than between 100-140 m <b>or</b> not in proportion		1
<b>Total</b>			<b>8</b>

question	answers	extra information	mark
<b>10(a)</b>	<b>b</b>	correct order only	1
	<b>c</b>		1
<b>10(b)</b>	mirror opposite road junction	judged by eye	1
	mirror facing correct way, angle correct		1
<b>Total</b>			<b>4</b>



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question	answers	extra information	mark
<b>11(a)</b>	photosynthesis		1
	carbon dioxide taken in		1
<b>11(b)</b>	2.5(:1)	correct answer with or without working ignore rounding with correct working do <b>not</b> allow other equivalent ratios for both marks if answer incorrect evidence of selection of 10 (insects) <b>and</b> 4 (frogs) <b>or</b> 50 <b>and</b> 20 <b>or</b> 1 <b>and</b> 0.4 for <b>1</b> mark if no other working allow <b>1</b> mark for 0.4(:1) on answer line	2
<b>11(c)</b>	(increase as) fewer insects eaten by frogs		1
<b>11(d)</b>	all living organisms respire		1
	and the process of respiration releases energy		1
	some of this energy is used when organisms move		1
	and energy is also lost to the environment as heat		1
	in addition to losses related to respiration. Energy is also lost from organisms via waste		1
	organisms that are not eaten eventually die and the energy in their bodies will eventually be transferred to microorganisms / detritivores.		1
<b>Total</b>			<b>11</b>

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<b>question</b>	<b>answers</b>	<b>extra information</b>	<b>mark</b>
<b>12(a)(i)</b>	the continents of South America and Africa would have fitted together like a jigsaw  there are matching / similar rocks / fossils on the continents of South America and Africa		1  1
<b>12(a)(ii)</b>	other scientists thought that continents are fixed / cannot float <b>or</b> Wegener had no evidence to prove that continents can move  and that a land bridge could explain the matching / similar rocks / fossils on the continents of South America and Africa	allow Wegener was not respected by other scientists / PhD in astronomy	1  1
<b>12(b)</b>	radioactive  mantle	words must be in the order shown	1  1
<b>Total</b>			<b>6</b>

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<b>13</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 a positive and a negative environmental impact involved with one or more methods used to reduce the amount of plastic bags sent to landfill.	There is some description of both positive and negative environmental impacts involved with at least 2 methods used to reduce the amount of plastic bags sent to landfill.	There is a clear, balanced and detailed description of both a positive and a negative environmental impact of using each of the 3 methods used to reduce the amount of plastic bags sent to landfill.
<p><b>examples of the points made in the response</b></p> <p><b>Reuse:</b> Reuse means less bags used so:</p> <p>Positive environmental impact</p> <ul style="list-style-type: none"> <li>• Saves raw materials/crude oil</li> <li>• Saves energy</li> <li>• Cuts down on CO<sub>2</sub> emissions</li> <li>• Less global warming</li> </ul> <p>Negative environmental impact</p> <ul style="list-style-type: none"> <li>• Could cause litter</li> <li>• Could still be sent to landfill</li> </ul> <p><b>Recycle:</b> Bags can be recycled so:</p> <p>Positive environmental impact</p> <ul style="list-style-type: none"> <li>• Used to make new plastic bags / objects</li> <li>• Saves raw materials / crude oil</li> <li>• Saves energy compared to producing plastic bags from crude oil</li> <li>• Cuts down on CO<sub>2</sub> emissions</li> <li>• Less global warming</li> </ul> <p>Negative environmental impact</p> <ul style="list-style-type: none"> <li>• Collection point sites cause an eyesore / litter problem</li> <li>• Transportation to recycling plant releases carbon dioxide / causes global warming</li> </ul>			

**Burn:**

Bags can be burned so:

## Positive environmental impact

- Could provide energy for heating buildings
- Could provide energy for generating electricity

## Negative environmental impact

- Increases CO<sub>2</sub> emissions
- Increases global warming
- Could release toxic gases
- Does not conserve raw materials / crude oil

<b>Total</b>			<b>6</b>
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<b>question</b>	<b>answers</b>	<b>extra information</b>	<b>mark</b>
<b>14(a)</b>	Doppler effect		1
<b>14(b)</b>	the wavelength increases		1
	the frequency decreases		1
<b>Total</b>			<b>3</b>

<b>question</b>	<b>answers</b>	<b>extra information</b>	<b>mark</b>
<b>15(a)(i)</b>	to compare mobile phone usage between the two groups		1
<b>15(a)(ii)</b>	enough data to indicate relationships		1
	<b>or</b> reduce effect of anomalous data		
<b>15(b)(i)</b>	ethical		1
<b>15(b)(ii)</b>	research may be biased (in favour of companies)		1
	negative effects on health may not get published	accept negative effects on health may be played down	1
<b>15(b)(iii)</b>	it allows people to easily identify lower risk phones		1
	and this allows people to make a more informed choice	accept and this allows a comparison to be made	1
<b>Total</b>			<b>7</b>