



**2013 Science**

**Standard Grade General**

**Finalised Marking Instructions**

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## Part One: General Marking Principles for Science Standard Grade General

*This information is provided to help you understand the general principles you must apply when marking candidate responses to questions in this Paper. These principles must be read in conjunction with the specific Marking Instructions for each question.*

- (a) Marks for each candidate response must always be assigned in line with these general marking principles and the specific Marking Instructions for the relevant question. If a specific candidate response does not seem to be covered by either the principles or detailed Marking Instructions, and you are uncertain how to assess it, you must seek guidance from your Team Leader/Principal Assessor.
- (b) Marking should always be positive ie, marks should be awarded for what is correct and not deducted for errors or omissions.

### GENERAL MARKING ADVICE: Science Standard Grade General

*The marking schemes are written to assist in determining the “minimal acceptable answer” rather than listing every possible correct and incorrect answer. The following notes are offered to support Markers in making judgements on candidates’ evidence, and apply to marking both end of unit assessments and course assessments.*

#### Marking

The utmost care must be taken when entering and totalling marks. Where appropriate, all summations for totals must be carefully checked and confirmed.

Where a candidate has scored zero marks for any question attempted, “0” should be entered against the answer.

#### Recording of Marks

Where papers assess more than one element, care must be taken to ensure that marks are entered in the correct column.

The **Total** mark for each paper or element should be entered (in red ink) in the box provided in the top-right corner of the front cover of the answer book (or question/answer book).

**Always** enter the **Total** mark as a **whole number**, where necessary by the process of rounding up.

The transcription of marks, within booklets and to the Mark Sheet, should always be checked.

**Markers are reminded that they must not write comments on scripts – comments include words or acronyms.**

**Ticks, crosses, lines and numbers are acceptable.**

**Part Two: Marking Instructions for each Question**

Please note that **FRACTIONAL** marks should **NOT** be awarded for responses to questions on this paper.

Please note that where a question specifies circling or underlining, other forms of clearly indicating a response are acceptable.

		Space for Notes
1	<p><b>a</b> Idea of</p> <ul style="list-style-type: none"> <li>• different <u>colour of face</u></li> <li>• different <u>foods</u></li> </ul> <p>e.g                      Egyptian vulture has yellow face (Osprey has white face)                      Egyptian vulture eats dead animals (Osprey eats live animals, Osprey eats fish)</p> <p style="text-align: right;"><b>Both required</b></p>	PS1
1	<p><b>b</b> Round(ed) wings                      Eats <u>birds</u>                      Eats <u>live</u> animals</p> <p style="text-align: right;"><b>All correct, 2 marks                      2 correct, 1 mark</b></p>	<p>PS2</p> <p><b>Accept</b>                      Eats live birds                      as two points</p>

		Space for Notes
2	<p style="text-align: center;"><b>All correct , 2 marks</b> <b>1/2 correct, 1 mark</b></p>	KU2
3	a crimping	KU1
3	b corrosion <b>OR</b> rusting	KU1
3	c anodising	KU1
3	d heating and quenching <b>OR</b> alloying	KU1
3	e combustion	KU1

		Space for Notes
4	vacuum (and/or) cleaner	<b>KU1</b> <b><u>Accept</u></b> 1.7 kW
5	a 2	<b>KU1</b>
5	<b>bi</b> (Making) chemicals (Making) plastics	<b>KU1</b> <b><u>Not</u></b> <ul style="list-style-type: none"> <li>• Jet fuel</li> <li>• Aviation fuel</li> <li>• Petrol</li> <li>• Or any other fuel</li> </ul>
5	<b>bii</b> Any one from:  Tar/ roads/wax/roofing	<b>KU1</b>

			Space for Notes
6	a	Diphtheria	PS1 Correct answer only
6	b	1951	PS1 Correct answer only
6	c	Idea of a link between whooping cough immunisation and <b>brain damage</b>	PS1 Accept answers which suggest the immunisation caused brain damage e.g. "It caused brain damage"
6	d	idea of an <b><u>increased</u></b> or <b><u>90%</u></b> level of immunisation	PS1 <b><u>Not</u></b> <ul style="list-style-type: none"> <li>Answers indicating immunisation increased to <b>52%</b></li> </ul>

			Space for notes
7	a	A and D	PS1 Accept either order
7	b	Idea of If the thickness (of polystyrene) made a difference (to the heat loss from the cup)	PS1 <b>Accept</b> <ul style="list-style-type: none"> <li>Numerical values for thickness</li> </ul>
7	c	Any <b>one</b> from  <b>starting</b> temperature of water, <b>room</b> temperature, size/ shape/ colour of the cup, draughts, time, surface cup is sitting on	PS1 <b>Not</b> <ul style="list-style-type: none"> <li>Temperature of water</li> <li>Put a lid on all of them</li> <li>Keep both without a lid</li> <li>Same thickness (of polystyrene)</li> <li>Same volume/level/depth of water</li> <li>Type/material of cup</li> <li>Same position of thermometer</li> </ul>

		Space for Notes																	
8	Headings, in full as in passage Minerals or Deficiency diseases must be first column <b>1 mark</b>	PS3	<table border="1"> <thead> <tr> <th>Minerals</th> <th>Deficiency diseases</th> <th>Food sources</th> </tr> </thead> <tbody> <tr> <td>Calcium</td> <td>Rickets</td> <td>Milk</td> </tr> <tr> <td>Iron</td> <td>Anaemia</td> <td>Red meat</td> </tr> <tr> <td>Iodine</td> <td>Goitre</td> <td>Seafood</td> </tr> <tr> <td>Fluorine</td> <td>Osteoporosis</td> <td>Seafood</td> </tr> </tbody> </table>		Minerals	Deficiency diseases	Food sources	Calcium	Rickets	Milk	Iron	Anaemia	Red meat	Iodine	Goitre	Seafood	Fluorine	Osteoporosis	Seafood
	Minerals		Deficiency diseases	Food sources															
Calcium	Rickets	Milk																	
Iron	Anaemia	Red meat																	
Iodine	Goitre	Seafood																	
Fluorine	Osteoporosis	Seafood																	
12 data correct 8-11 data correct <b>2 marks</b>  Ignore additional references to “lack of”, “insufficient” and “low in” in the column for Minerals <b>1 mark</b>																			
9	Any <b>two</b> from <ul style="list-style-type: none"> <li>• light (intensity)</li> <li>• water <u>flow</u> (rate)</li> <li>• pH (of soil/water)</li> <li>• wind speed</li> <li>• temperature</li> <li>• oxygen (level)</li> <li>• soil fertility</li> </ul> <b>1 mark each</b>	KU2	<p><b><u>Accept also</u></b></p> <ul style="list-style-type: none"> <li>• food</li> <li>• space</li> <li>• shelter</li> <li>• weather</li> <li>• climate change</li> </ul> <p><b><u>Not</u></b></p> <ul style="list-style-type: none"> <li>• pollution</li> <li>• rubbish</li> <li>• litter</li> <li>• rainfall/lack of rain</li> <li>• predators/producers</li> <li>• water (given in question)</li> <li>• air</li> <li>• humidity</li> <li>• disease</li> </ul>																



			Space for Notes
10	a Ashby	PS1	
10	b 15	PS1	
10	c Woodside Highest number of lichens or named lichen <b>both parts correct</b>	KU1	
11	ai B	KU1	
11	aii E	KU1	
11	b Out Up <b>1 mark each</b>	KU2	
11	c Idea of in the blood	KU1	<b>Accept</b> In blood cells, in red blood cells In blood vessels, in named blood vessels

				Space for Notes
12	<p><b>a</b> Four chains with arrows <b>3 marks</b>  Four chains with links <b>2 marks</b>  Three chains with arrows <b>2 marks</b>  Three chains with links <b>1 mark</b>  Two chains with arrows <b>1 mark</b></p> <p><b>Additional incorrect arrows –1 mark per arrow</b></p>	PS3	Correct arrows must point up trophic levels Incorrect arrows pointing down count as links only	
12	<b>b</b> Starch	KU1		
12	<b>c</b> (Food chain 1 is) shorter	KU1	<p><b><u>Accept idea of</u></b></p> <ul style="list-style-type: none"> <li>• Fewer links</li> <li>• Fewer animals</li> <li>• Fewer consumers</li> <li>• Fewer predators</li> </ul> <p><b><u>Not</u></b></p> <ul style="list-style-type: none"> <li>• Fewer producers</li> <li>• Less food</li> </ul>	
12	<b>d</b> Idea that it has another food source/can eat dog whelk	KU1		

			Space for notes
<b>13</b>	<p>Legend 'Material' on x-axis <b>1 mark</b></p> <p>Full label 'Tensile strength' <b>and</b> unit (MPa) <b>and</b> linear scale <b>from 0-80</b> on y-axis <b>1 mark</b></p> <p>All bars correct height with full labels or key <b>1 mark</b></p>	<b>PS3</b>	<p>Allow transposed axes</p> <p>Accept key added to data table</p> <p>Bar for polypropene must be <b>between</b> 34 and 36</p> <p>Bar for solder must be <b>between</b> 44 and 46</p> <p>If y-axis is not linear over 0-80, maximum is 1 mark for legend 'Material'</p>
<b>14</b>	<b>a</b> White	<b>PS1</b>	
<b>14</b>	<b>b</b> 14	<b>PS1</b>	
<b>14</b>	<b>c</b> Tiger	<b>PS1</b>	
<b>15</b>	<b>a</b> Shelter	<b>KU1</b>	Correct answer only
<b>15</b>	<b>b</b> Water	<b>KU1</b>	Correct answer only

			Space for Notes
<b>16</b>	<p>Polyurethane</p> <p>Carbon monoxide</p> <p style="text-align: right;"><b>1 mark each</b></p>	<b>KU2</b>	
<b>17</b>	<p>Any <b>two</b> from</p> <p>As (water) temperature increases, (number of) stonefly (larvae) decreases (or vice versa)</p> <p>As (water) temperature increases, (number of) mayfly (larvae) increases (or vice versa)</p> <p>As (water) temperature increases, (total number of) invertebrates (generally) decreases (or vice versa)</p> <p>As (number of) mayfly (larvae) increases, (number of) stonefly (larvae) decreases (or vice versa)</p> <p style="text-align: right;"><b>1 mark each</b></p>	<b>PS2</b>	

			Space for Notes
18	Any <b>one</b> or example from  Violence, accidents at work, absence from work, financial problems, family problems, relationship problems, anti-social behaviour, etc	KU1	<p><b>Not</b></p> <ul style="list-style-type: none"> <li>• The word 'Abuse' by itself (alcohol abuse in question)</li> <li>• Drinking and driving (given in question)</li> </ul> <p><b>Accept</b></p> <ul style="list-style-type: none"> <li>• Abuse <u>of other people</u></li> </ul>
19	7·5  correct total (37·5) <b>1 mark</b>  incorrect total correctly divided by 5 <b>1 mark</b>	PS2	<p><b>Accept</b></p> <p>Correct answer with or without working Correct total with or without working</p> <p>For division mark only working must be shown</p>
20	a 25	PS1	
20	b Propanol	PS1	
21	a D (valve)	KU1	
21	b A (vein)	KU1	
21	c E ( <u>white</u> blood cell)	KU1	

			Space for Notes
22	a	Armenia	PS1
22	b	Brazil	PS1
22	c	27	PS1
23	a	C	KU1
23	b	Any two from <ul style="list-style-type: none"> <li>• Carbon monoxide / CO</li> <li>• Carbon dioxide / CO<sub>2</sub></li> <li>• Sulphur dioxide / SO<sub>2</sub></li> <li>• Water (vapour) / steam / hydrogen oxide / H<sub>2</sub>O</li> </ul>	<p><b>Accept</b> Carbon oxide (but not with carbon dioxide or carbon monoxide) Sulphur oxide Chemical formulae</p> <p><b>Not</b> smoke</p>
23	c	i Steam Generator  <b>1 mark each</b>	KU2
23	c	ii (Nuclear fuel) is dangerous / toxic / harmful / radioactive / difficult to store safely Waste is dangerous / harmful / radioactive Waste is difficult to dispose of / store safely Waste has to be stored <u>deep</u> underground / for a long time Expensive	<p>KU1</p> <p><b>Not</b> Pollution It can blow up</p>

			Space for Notes
24	<p><b>a</b> <u>Low</u> thermal (conductivity) (Good) corrosion resistance</p> <p style="text-align: right;"><b>1 mark each</b></p>	KU2	
24	<p><b>b</b> Hardness chromium tungsten</p> <p style="text-align: right;"><b>All correct, 2 marks</b> <b>1,2 correct, 1 mark</b></p>	KU2	
25	<p><b>a</b> As light / intensity / lumens increases, power / rating / watts increases (for the same bulb) (or vice versa)</p> <p>Incandescent (bulb) has higher power / rating / watts / uses more energy / is less efficient (than fluorescent bulb) (for the same light intensity) (or vice versa)</p> <p style="text-align: right;"><b>1 mark each</b></p>	PS2	<p><b>Not</b> Fluorescent bulb is less bright / gives less light intensity Two conclusions relating light intensity to power rating i.e. for each bulb Two conclusions relating type of bulb to power / watts / rating / energy / efficiency</p>
25	<p><b>b</b> Any value <b>between</b> 15 and 20</p>	PS1	

			Space for Notes
<b>26</b>	<p><b>a</b> Label (<b>current</b>) and unit (<b>amps / A</b>) on y-axis <b>1 mark</b></p> <p>Linear scale from <b>20 – 100 on x-axis</b> Linear scale from <b>2 – 10 on y-axis</b> <b>1 mark</b></p> <p>All points plotted and joined correctly No tolerance Ignore any extrapolation <b>1 mark</b></p>	<b>PS3</b>	
<b>26</b>	<b>b</b> Any value <b>between</b> 1.0 and 2.0		

[END OF MARKING INSTRUCTIONS]