



## **General Certificate of Secondary Education**

# **Additional Applied Science 4863**

**AASC/2F Science at Work**

## **Mark Scheme**

*2008 examination – January series*

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

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of candidates' 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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**Foundation / 2F**

<b>question</b>	<b>answers</b>	<b>extra information</b>	<b>marks</b>
<b>1(a)</b>	Salmonella		1
<b>1(b)</b>	any <b>two</b> from: <ul style="list-style-type: none"> <li>• sterilise equipment / surfaces / use disinfectant</li> <li>• keep meats / equipment separate</li> <li>• wash hands / use gloves</li> </ul>	accept clean / wash ignore references to washing / examining meat ignore covering meat / protective clothing	2
<b>1(c)</b>	any <b>two</b> from: <ul style="list-style-type: none"> <li>• fever / (high) temperature</li> <li>• stomach pains</li> <li>• vomiting / sickness / being sick / getting sick</li> <li>• diarrhoea</li> </ul>	ignore feeling ill ignore headaches ignore dehydration	2
<b>Total</b>			<b>5</b>

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<b>question</b>	<b>answers</b>	<b>extra information</b>	<b>marks</b>
<b>2(a)</b>	vitamin C – antioxidant tartrazine – colouring aspartame - sweetener		<b>3</b>
<b>2(b)(i)</b>	to improve appearance / make it more appealing / make them eat it / make it look appetising	ignore references to taste / texture	<b>1</b>
<b>2(b)(ii)</b>	cause hyperactivity		<b>1</b>
<b>Total</b>			<b>5</b>

question	answers	extra information	marks
3(a)(i)	7 (breaths per minute)		1
3(a)(ii)	7/14 × 100 50%	allow ecf from (i) correct answer alone full marks	2
3(a)(iii)	any <b>two</b> from: <ul style="list-style-type: none"> <li>heart rate <u>increases</u> / blood pumps faster / pulse increased</li> <li>carbon dioxide (in the blood) <u>increases</u></li> <li><u>more</u> oxygen (used up)</li> </ul>	ignore references to breathing / sweating / red face	2
3(a)(iv)	to transport more oxygen to the cells		1
3(a)(v)	circulatory / cardiovascular / blood	ignore heart	1
3(b)(i)	increases increase		1 1
3(b)(ii)	sweating / panting / perspiring	allow hairs flatten ignore external factors( eg 'use a fan' / drink water / take off clothes)	1
3(b)(iii)	any <b>two</b> from: <ul style="list-style-type: none"> <li>water /fluid / liquid lost / decreased</li> <li>as sweat / in breath</li> <li>to conserve water</li> </ul>	accept dehydration / dehydrated 'it' = urine = incorrect	2
<b>Total</b>			<b>12</b>

question	answers	extra information	marks
4(a)	any <b>two</b> from: <ul style="list-style-type: none"> <li>• protective clothing / gloves / overalls / overshoes / bodysuit</li> <li>• face masks</li> <li>• restricted access / barrier tape</li> </ul>	ignore apron not just 'suit'	2
4(b)	any <b>three</b> from: <ul style="list-style-type: none"> <li>• use forceps / tweezers / sticky tape</li> <li>• place in (evidence) bag / container</li> <li>• seal the bag</li> <li>• label</li> </ul>		3
4(c)(i)	carbonate ions sodium ions alkali		1 1 1
4(c)(ii)	sodium carbonate	accept carbonate sodium	1
4(c)(iii)	CO <sub>2</sub>		1
<b>Total</b>			<b>10</b>

question	answers	extra information	marks
5(a)(i)	young child – 1300 office worker – 2000 builder – 4000		1
5(a)(ii)	carbohydrate		1
5(a)(iii)	(too much salt) can cause <u>high</u> blood pressure		1
5(a)(iv)	getting less exercise / less movement / resting a lot  so will put on weight / not burn up energy / food		1  1
5(b)(i)	snack A		1
5(b)(ii)	any <b>two</b> from:  <ul style="list-style-type: none"> <li>• <u>less</u> energy / <u>less</u> fattening / <u>less</u> fat / other snacks could cause obesity / <u>fewer</u> calories</li> <li>• <u>less</u> sugar / risk of tooth decay</li> <li>• <u>more</u> vitamins</li> <li>• <u>more</u> minerals / <u>more</u> calcium</li> <li>• <u>more</u> protein</li> </ul>	if B or C chosen in (b)(i) accept gives <u>more</u> energy for <b>1</b> mark  <b>not</b> just more healthy / healthy / more nutritious / more nutrients  must be comparative	2
5(b)(iii)	calcium		1
5(b)(iv)	teeth / bones	do <b>not</b> accept growth unqualified	1
<b>Total</b>			<b>10</b>

question	answers	extra information	marks
<p><b>6(a)</b></p>	<p>any <b>two</b> from:</p> <ul style="list-style-type: none"> <li>• height (above ankle)</li> <li>• shape qualified (eg pointed toe)</li> <li>• position of laces</li> <li>• tassels / loops at back</li> <li>• studs, not blades / bars / (different) tread / (different) grip / spikes</li> <li>• (longer) 'tongue' / flap over laces</li> </ul>	<p>not size</p> <p><b>ignore</b> references to colour / strength / cost / flexibility</p>	<p>2</p>
<p><b>6(b)</b></p>	<p>any <b>three</b> from:</p> <ul style="list-style-type: none"> <li>• lightweight</li> <li>• doesn't absorb so much water / waterproof</li> <li>• better ball control</li> <li>• more flexible / soft / stretchy</li> <li>• leather changes shape</li> </ul>	<p><b>ignore</b> references to cost / comfort / manufacturing / looks / cleaning / strength / durability / environment / breathability / easier to put on / better fit</p>	<p>3</p>



question	answers	extra information	marks
6(c)	any <b>one</b> from: <ul style="list-style-type: none"><li>• thin / flexible bottom plate</li><li>• less / no support / protection to the foot</li></ul> <b>or</b> <ul style="list-style-type: none"><li>• laces at the side</li><li>• less protection to the foot</li></ul> <b>or</b> <ul style="list-style-type: none"><li>• sharper studs</li><li>• more pressure on foot when stood on</li></ul> <b>or</b> <ul style="list-style-type: none"><li>• lower ankle</li><li>• less support / protection</li></ul> <b>or</b> <ul style="list-style-type: none"><li>• toe more pointed</li><li>• digs into ground / more pressure on foot</li></ul>	feature must be qualified to obtain both marks	2

question	answers	extra information	marks
6(d)	<p><b>material</b> – metal, polymer or composite</p> <p><b>reason:</b></p> <p>metal, <b>two</b> from:</p> <ul style="list-style-type: none"> <li>• strong / doesn't break</li> <li>• durable / tough / long lasting</li> <li>• hard</li> </ul> <p>polymer, <b>two</b> from:</p> <ul style="list-style-type: none"> <li>• light</li> <li>• strong</li> <li>• durable</li> </ul> <p>composite, <b>two</b> from a combination of the above</p>	<p>no marks for material</p> <p>no marks if haven't stated material or given wrong material</p> <p>two materials each with one reason = 2 marks</p> <p>ignore references to waterproofing</p> <p>ignore grip</p> <p>a mention of a composite combining the properties of metal and polymer gains <b>two</b> marks</p>	2
<b>Total</b>			<b>9</b>

question	answers	extra information	marks
7(a)	loop		1
7(b)(i)	yes – no mark  fingerprint <u>matches</u> C / one of the prints at the crime scene		1
7(b)(ii)	15 (mm)	± 1 mm  allow 1.5 cm, but <b>must</b> give correct unit	1
7(b)(iii)	3( mm)  <b>or</b>  1/5 of candidate's answer to (ii)		1
7(c)	any <b>three</b> from:  <ul style="list-style-type: none"> <li>• dust / powder</li> <li>• lift with Sellotape / sticky tape / photograph (the print)</li> <li>• mount on card / slide</li> <li>• (store) on computer / database</li> </ul>	allow glue / UV light  must be a consistent technique  ignore contamination issues	3

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<b>question</b>	<b>answers</b>	<b>extra information</b>	<b>marks</b>
7(d)	only proves suspect was at the scene		1
	then <b>one</b> from: <ul style="list-style-type: none"><li>• (may have been at the scene) at a different time</li><li>• (was present) but did not commit the crime</li></ul>		1
<b>Total</b>			<b>9</b>
			<b>Overall mark = 60</b>

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