



**General Certificate of Secondary Education
January 2012**

Additional Applied Science

4863

AASC/2F Science at Work

Unit 2

Mark Scheme

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AASC/2F

Question 1

question	answers	extra information	mark
1(a) A	tweezers sticky tape		1 1
1(b)(i) G	use it to reveal / <i>find</i> / <i>see</i> / <i>test for</i> / <i>dust</i> fingerprints	<i>do not accept collect / lift / get / match</i> <i>do not accept fingerprints alone</i>	1
1(b)(ii) E	<i>dust</i> the powder on the fingerprint using the <u>brush</u>	<i>allow dust on or off</i> <i>accept any idea of getting powder on to fingerprint with brush</i>	1
1(c)(i) E	any three from: <ul style="list-style-type: none"> name / <i>signature</i> of <i>person collecting sample (SOCO)</i> date / time of collection <i>where sample found or what investigation</i> what is in the bag instructions for forensic team or what tests to be done crime number or case number or evidence number 		3
1(c)(ii) E	fizzing / bubbles / effervescence		1
1(c)(iii) G	carbon dioxide / CO ₂	<i>if symbol used must be capitals and number must be subscript</i>	1
1(c)(iv) A	brick red		1
Total			10

AASC/2F

Question 2

question	answers	extra information	mark
2(a)(i) E	light / low density strong flexible	<i>allow doesn't break / snap</i> <i>allow bendy</i> do not accept statements directly from text <i>ie</i> easy to carry, take the weight of the athlete, able to alter its shape <i>ignore durable</i>	1 1 1
2(a)(ii) A	composite		1
2(b)(i) G	1964		1
2(b)(ii) G	1.41 (<i>metres</i>)	<i>allow 1.40–1.45</i>	1
2(b)(iii) E	any two from: <ul style="list-style-type: none"> • better fitness / <i>strength</i> • better diet • better clothing / <i>shoes</i> • <i>better technique / skill</i> • better coaching / training • <i>better running surface</i> 	<i>indication of improvement needed for the mark in each point</i> <i>ignore any reference to poles or general stadium conditions</i> <i>ignore reference to working harder or training longer</i>	2
2(c)(i) E	rubber grip or dimpled surface or material which provides friction or suitable diameter	<i>not just grip</i> <i>reference to diameter must be explained</i> <i>ignore chalk</i>	1
2(c)(ii) G	bicep(s)		1

Question 2 continues on the next page

AASC/2F**Question 2 continued**

question	answers	extra information	mark
2(c)(iii) A	antagonistic		1
Total			11

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Question 3

question	answers	extra information	mark
3(a) E	97.5	<i>correct answer with or without working gains 2 marks</i> <i>if answer incorrect, allow correct reading from graph (39) or their reading from graph x 2.5 for 1 mark</i>	2
3(b)(i) G	2 bars plotted correctly 15g of sugar 9g of fibre	<i>+/- ½ small square</i>	1
3(b)(ii) E	any two from: <ul style="list-style-type: none"> less sugar more protein more fibre 	<i>ignore 'a lot of' or 'high'</i>	2
3(b)(iii) E	any one from: <ul style="list-style-type: none"> <i>to make red blood cells</i> <i>to make haemoglobin</i> <i>to transport oxygen</i> <i>to prevent anaemia</i> 	<i>do not accept to make blood or keep blood healthy</i>	1
3(c)(i) E	bacteria / fungi / algae / virus	<i>accept any named example eg salmonella / yeast</i> <i>allow mould</i>	1
3(c)(ii) E	moisture warmth	<i>allow water</i> <i>allow heat</i>	1 1
3(c)(iii) E	any two from: <ul style="list-style-type: none"> canning / <i>tinned</i> pickling / adding vinegar adding sugar vacuum packing salting drying 	<i>allow <u>airtight</u> bag / jar / container</i>	2
Total			11

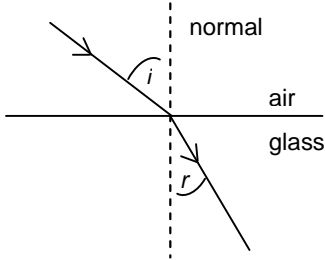
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Question 4

question	answers	extra information	mark
4(a)(i) E	any two from: <ul style="list-style-type: none"> • seeds • steak • chicken 	apply list principle if more than two foods given for each point	2
4(a)(ii) E	build muscles or build up power in his muscles / legs	allow repair muscles	1
4(a)(iii) E	getting fat or putting on too much weight or obesity	allow diabetes / heart disease	1
4(b)(i) E	using up <i>more</i> energy or an indication of increased respiration	allow a lot of energy ignore calories	1
4(b)(ii) E	1000 from fats and proteins $\frac{1000}{5000} \times 100 = 20\%$	correct answer with or without working gains 2 marks allow ecf from subtraction	1 1
4(c)(i) G	nylon		1
4(c)(ii) G	cotton		1
4(d) E	fits close to the body or prevents drag or more aerodynamic / streamlined		1
Total			10

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Question 5

question	answers	extra information	mark
5(a)(i) E	use plasticine press / pour into markings or make a mould / cast	allow putty / plaster of paris / moulding clay / silicone rubber do not allow blue-tac if no other marks gained allow photograph for 1 mark	1 1
5(a)(ii) A	C		1
5(a)(iii) E	only proves the shoe was at the scene at some time, not the suspect	owtte allow other people have the same shoes	1
5(b) E	<p>$RI = \sin i / \sin r$</p> <p>then:</p>  <p>if only diagram given any two from:</p> <ul style="list-style-type: none"> some indication of direction of travel of light normal line marked angle of incidence and angle of refraction marked <p>if written description given any two from:</p> <ul style="list-style-type: none"> send a ray of light into the glass draw the normal measure the angle of incidence and the angle of refraction 	<p>eg arrows on ray or air/glass interface labelled or glass block given with ray going all way through</p> <p>normal must be drawn so both angles can be measured</p> <p>accept through ignore beam</p> <p>if written description contradicts diagram, use list principle</p>	1 max 2 max 2

AASC/2F**Question 5 continued**

question	answers	extra information	mark
5(c) E	not the same glass or the glass did not come from the crime scene / <i>window</i>		1
	glass on the suspect was from a television		1
Total			9

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question	answers	extra information	mark
6(a)(i) E	aspartame - improve flavour / sweetener tartrazine - improve appearance / colour	<i>apply list principle</i> <i>if no other marks, allow 1 mark for both additives correctly named</i>	1 1
6(a)(ii) E	may cause hyperactivity	<i>allow hyper</i> <i>allow reference to allergy</i>	1
6(a)(iii) G	650(mg)		1
6(b)(i) E	preservative	<i>allow to make it last longer or increase shelf life</i>	1
6(b)(ii) E	any two from: <ul style="list-style-type: none"> • <i>implication of loss of reputation</i> • <i>implication of loss of direct over the counter sales</i> • <i>implication of other costs to company</i> 	<i>eg bad press</i> <i>eg lose customers</i>	2
6(b)(iii) E	any two from: <ul style="list-style-type: none"> • <i>loss of faith / trust in the company</i> • <i>worry about people drinking the contaminated product</i> • <i>increased awareness of ingredients</i> 	<i>eg won't buy it again</i> <i>accept converse if reason given</i> <i>eg would read the labels more carefully</i>	2
Total			9