

# A-LEVEL

# HEALTH AND SOCIAL CARE

HSC07 - Food and Fitness

Mark scheme

---

2820

June 2014

---

Version: 1.0 Final

---

---

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

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of students' 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.

Further copies of this Mark Scheme are available from [aqa.org.uk](http://aqa.org.uk)

1	a	<p>Any <b>two</b> from:</p> <ul style="list-style-type: none"> <li>• Build/growth (AW) (1)</li> <li>• maintain (1)</li> <li>• repair (1)</li> <li>• body tissue/muscle/structure (1) max 2</li> </ul> <p style="text-align: right;">max 2</p>	2	<p>Allow hormones/antibodies/enzymes (1)</p>
---	---	---	---	--

1	b	<p>Ref to:</p> <ul style="list-style-type: none"> <li>• protein is the main component of muscle (1)</li> <li>• therefore protein is needed to build muscle/growth/mass (AW) (1)</li> <li>• protein in muscle enables movement (1)</li> <li>• muscles are vital to enable exercise (1)</li> <li>• Protein used to repair muscle (AW)</li> </ul> <p style="text-align: right;">max 2</p>	2	
---	---	--	---	--

1	c	<p>Any <b>two</b> from:</p> <ul style="list-style-type: none"> <li>• meat (1)</li> <li>• fish (1)</li> <li>• eggs (1)</li> <li>• milk (1)</li> <li>• cheese (1)</li> <li>• nuts (1)</li> <li>• peas (1)</li> <li>• beans (1)</li> <li>• Pulses (1)</li> <li>• Soya (1)</li> <li>• Tofu (1)</li> </ul> <p style="text-align: right;">max 2</p>	2	
---	---	---	---	--

1	d	<p>Ref to:</p> <ul style="list-style-type: none"> <li>• George has a high VO<sub>2</sub>max so therefore has good/above average oxygen uptake and use (1)</li> <li>• VO<sub>2</sub> max measures <b>aerobic</b> fitness (1)</li> <li>• in terms of the maximum capacity AW (1)</li> <li>• to take in oxygen (1)</li> <li>• transport it (1)</li> <li>• and use it in cellular respiration AW (1)</li> <li>• units ml/kg/min millimetres of oxygen/kilograms of body weight/minute (1)</li> <li>• Without fatigue for 12 minutes (1)</li> </ul> <p>Allow – ability to endure/sustain work for very long periods/stamina (1)</p> <p style="text-align: right;">max 5</p>	5	Maximum marks 4 if units are not included
---	---	--	---	---

1	e	<p>Reference to the long term physiological effects of training regularly improving George's aerobic fitness by:</p> <ul style="list-style-type: none"> <li>• increasing the surface area of his lungs/improving his oxygen diffusion/lung capacity</li> <li>• increasing the numbers of capillaries in his lungs – skeletal muscles</li> <li>• increasing the oxygen carrying capacity of his blood</li> <li>• improving the stroke volume of his heart AW</li> <li>• increasing cardiac output AW</li> <li>• reducing the stress on his heart/not having to work as hard AW</li> <li>• lowering his resting pulse rate / increase maximum rate</li> <li>• improving his arterial walls' elasticity</li> <li>• so they are able to withstand greater fluctuations in blood pressure AW</li> </ul>	9	
---	---	--	---	--

		<ul style="list-style-type: none"> <li>• raising the metabolic – cellular respiratory rate in George’s cells – tissues</li> <li>• efficiency of energy release</li> <li>• Enduring exercise for longer/stamina/endurance</li> </ul> <p><b>Mark Bands</b></p> <p><b>0 marks</b> No response worthy of credit.</p> <p><b>1 - 3 marks</b> Generally vague and repetitive answers covering 1-3 points with little detail. There will be little use of appropriate terminology.</p> <p><b>4 - 6 marks</b> Answers that are more detailed covering 4-6 points with generally appropriate terminology. Answers may lack precision but are organised.</p> <p><b>7 - 9 marks</b> Answers cover 7 or more points and are well structured and in good detail. There will be good use of appropriate terminology throughout.</p>		
--	--	--	--	--

2	a	<p><b>BMI</b> - Ref to:                  female A <b>within</b> normal range (1)                  female B <b>below</b> normal range (1)                  female C <b>above</b> normal range (1)                  female D <b>within</b> normal range (1)</p> <p style="text-align: right;">max 4</p>	4	
---	---	---	---	--

2	b	<p><b>Resting Pulse Rate</b> - Ref to:                  female A <b>within</b> normal range (1)                  female B <b>within</b> normal range (1)</p>	4	
---	---	--	---	--

		female C <b>above</b> normal range (1) female D <b>above</b> normal range (1)		
			max 4	

2	c	<p><b>Peak Flow</b> - Ref to:                  female A <b>within</b> normal range (1)                  female B <b>within</b> normal range (1)                  female C <b>below</b> normal range (1)                  female D <b>within</b> normal range (1)</p> <p style="text-align: right;">max 4</p>	4	
2	d	<p>Ref to:</p> <ul style="list-style-type: none"> <li>• female C <b>least fit</b> (1)</li> <li>• as female C takes the longest time to recover (1)</li> <li>• Adult B – <b>most fit</b> of the 4 females (1) is the quickest to recover (1)</li> <li>• Adults A &amp; D – <b>similar fitness</b> (1)</li> <li>• <b>fitter</b> than C/ <b>not as fit</b> as Adult B (1)</li> </ul> <p>Allow 1 mark for applied explanation – faster recovery to resting rate – the fitter the individual or vice versa (1)</p> <p style="text-align: right;">max 4</p>	4	

2	e	<p>1 mark for each of the <b>two</b> barriers given plus 1 mark for each suggestion on how they may be overcome. Suggestions must be linked to the barrier.</p> <p>Likely answers:</p> <table border="1" data-bbox="526 443 1646 1002"> <thead> <tr> <th data-bbox="526 443 1086 478"><b>Barriers: (max 2)</b></th> <th data-bbox="1086 443 1646 478"><b>Overcome by: (max 2)</b></th> </tr> </thead> <tbody> <tr> <td data-bbox="526 478 1086 550">Costs e.g. gym membership/fees (1).</td> <td data-bbox="1086 478 1646 550">Exercise for 'free' e.g. walk, run, exercise DVD's (1).</td> </tr> <tr> <td data-bbox="526 550 1086 622">Skill/fitness level (1).</td> <td data-bbox="1086 550 1646 622">Use beginners class (1) exercise with a friend at home (1).</td> </tr> <tr> <td data-bbox="526 622 1086 694">Facility location (1).</td> <td data-bbox="1086 622 1646 694">Exercise at home (1) housework (1) walk locally/ to transport (1).</td> </tr> <tr> <td data-bbox="526 694 1086 766">Family / Work Commitments (1).</td> <td data-bbox="1086 694 1646 766">Exercise with family members (1) work colleagues (1) cycle to work scheme (1)</td> </tr> <tr> <td data-bbox="526 766 1086 1002">Cultural attitudes (1).</td> <td data-bbox="1086 766 1646 1002">Separate gender classes/gym services (1) mixed exercise (1) exercise at home (1).</td> </tr> </tbody> </table> <p style="text-align: right;">max 2+2 = 4</p>	<b>Barriers: (max 2)</b>	<b>Overcome by: (max 2)</b>	Costs e.g. gym membership/fees (1).	Exercise for 'free' e.g. walk, run, exercise DVD's (1).	Skill/fitness level (1).	Use beginners class (1) exercise with a friend at home (1).	Facility location (1).	Exercise at home (1) housework (1) walk locally/ to transport (1).	Family / Work Commitments (1).	Exercise with family members (1) work colleagues (1) cycle to work scheme (1)	Cultural attitudes (1).	Separate gender classes/gym services (1) mixed exercise (1) exercise at home (1).	4	
<b>Barriers: (max 2)</b>	<b>Overcome by: (max 2)</b>															
Costs e.g. gym membership/fees (1).	Exercise for 'free' e.g. walk, run, exercise DVD's (1).															
Skill/fitness level (1).	Use beginners class (1) exercise with a friend at home (1).															
Facility location (1).	Exercise at home (1) housework (1) walk locally/ to transport (1).															
Family / Work Commitments (1).	Exercise with family members (1) work colleagues (1) cycle to work scheme (1)															
Cultural attitudes (1).	Separate gender classes/gym services (1) mixed exercise (1) exercise at home (1).															



3	a	<p>Likely points:</p> <ul style="list-style-type: none"> <li>• regular exercise will help suppress/reduce Jane’s appetite (1)</li> <li>• helping the appestat in her hypothalamus /brain (1)</li> <li>• less risk of her overeating (1)</li> <li>• storing excess food and gaining weight (1)</li> <li>• Jane will be less stimulated psychologically by smell/sight / taste of food /not thinking about food (1)</li> <li>• also regular exercise will help Jane use up energy (1)</li> <li>• achieve a negative balance / of input and output of energy equation (1)</li> <li>• help Jane lose weight (1)</li> <li>• also will help increase Jane’s metabolic rate (1)</li> <li>• reducing fat stores (1)</li> <li>• burning fat for energy (1)</li> </ul> <p style="text-align: right;">max 7</p>	7	
---	---	--	---	--

3	b	<p>Likely points will include:</p> <ul style="list-style-type: none"> <li>• ageing naturally causes a loss of effectiveness in body systems</li> <li>• regular exercise helps delay- slows the rate of decline – maintains body system</li> <li>• effectiveness - this may be different for different individuals</li> <li>• <b>the respiratory system</b></li> <li>• lung capacity will decrease/regular exercise helps maintain lung capacity AW</li> <li>• <b>musculo-skeletal system</b></li> <li>• loss of strength/loss of stamina – endurance/helps maintain metabolic rate/energy levels of the individual</li> <li>• <b>speed of movement</b></li> <li>• flexibility/bone density reduced/maintains bone density through calcium</li> <li>• depostion/lowers chance of osteoporosis AW</li> </ul>	8	
---	---	--	---	--

		<p><b>circulatory systems</b> cardiac output AW reduced</p> <ul style="list-style-type: none"> <li>• blood pressure rises/resting blood pressure reduced/reduced risk of clotting</li> <li>• thrombosis AW</li> <li>• level of blood cholesterol reduced/reduces atherosclerosis-atheroma-plaque AW</li> <li>• reduces protein depletion in muscles/maintains flexibility strength and elasticity of muscles and ligaments.</li> <li>• Stroke / Myocardial Infarction or heart attack</li> </ul> <p><b>Mark Bands</b></p> <p><b>0 Marks</b> No response worthy of credit</p> <p><b>1-2 Marks</b> Generally vague repetitive answers covering 1-2 points with little, if any, physiological detail. There will be little use of appropriate terminology.</p> <p><b>3-5 Marks</b> More detailed responses covering 3-5 points in some physiological detail. There will be some use of appropriate terminology and answers will be organised but lack some precision.</p> <p><b>6-8 Marks</b> Answers cover 6 or more points in good physiological detail and are well structured. There will be good use of appropriate technical terminology.</p>		
--	--	--	--	--

3	c		<p>Ref to:</p> <ul style="list-style-type: none"> <li>• Jane needing medical check/expert advice to determine safety (1)</li> <li>• A very gentle/low intensity exercise to begin (1)</li> <li>• with small progression steps AW (1)</li> <li>• increasing demand (1)</li> <li>• reduce intake of food (1)</li> <li>• eat three balanced meals a day (1)</li> <li>• suitable suggestions – low impact – walking/swimming/cycling (1)</li> <li>• Non weight bearing exercise</li> <li>• with monitoring of progress/demand AW (1)</li> <li>• Allow ref to minimum high intensity work (1)</li> <li>• concentrating instead on endurance (1)</li> <li>• diet suggestions – do not cut out any food groups (1)</li> <li>• reduce calories whilst increasing exercise (1)</li> </ul> <p style="text-align: right;">max 5</p>	5	
4	a		<p>Any <b>two</b> from:</p> <ul style="list-style-type: none"> <li>• construction of bones/teeth AW e.g. strong bones/ strong teeth(1)</li> <li>• muscle contraction(1)</li> <li>• nerve transmission (1)</li> <li>• blood clotting (1)</li> </ul> <p style="text-align: right;">max 2</p>	2	
4	b		<p>Ref to calcium deficiency:</p> <ul style="list-style-type: none"> <li>• causes rickets (1) AW</li> <li>• weakened bones/bone deformities (1)</li> <li>• especially in the legs/spine (1)</li> <li>• low bone density AW bones are not solid/small cavities/pores (1)</li> <li>• causes osteoporosis in females AW/females at high risk of fracturing bones easily (1)</li> <li>• impairment of muscle e.g. muscle contractions (1)</li> </ul>	3	<p>Will accept bleeding/blood clotting AW</p>

			<ul style="list-style-type: none"> <li>• Nerve function AW e.g. tingling/numbness</li> </ul>	max 3	
4	c		<p>Any <b>two</b> of the following sources of Calcium:</p> <ul style="list-style-type: none"> <li>• milk (1)</li> <li>• cheese (1)</li> <li>• Greek yoghurt (1)</li> <li>• green leafy vegetable – such as broccoli, cabbage or okra (1)</li> <li>• soya beans (1)</li> <li>• tofu (1)</li> <li>• nuts (1)</li> <li>• bread and anything made with fortified flour (1)</li> <li>• fish where you eat the bones e.g. sardines/tinned salmon (1)</li> </ul>	max 2	<p>Do not allow spinach</p> <p>Will accept dairy products (1)</p>
4	d		<p>Ref to:</p> <ul style="list-style-type: none"> <li>• (Simon needing to see his G.P). for expert/professional/medical advice (1)</li> <li>• to be (medically) checked for underlying health problems AW e.g. undiagnosed conditions (1)</li> <li>• which exercise may worsen (1)</li> <li>• check if fit enough AW e.g. healthy/ cope with the demands of exercise (1)</li> <li>• to help determine his personal exercise limits (1)</li> <li>• prevent over exertion (1)</li> <li>• prevent injury (1)</li> </ul>	max 4	4
4	e		<p>Ref to:</p> <p>Social benefits:</p> <ul style="list-style-type: none"> <li>• Simon exercising in groups/teams/with others</li> <li>• opportunity to interact socially</li> <li>• existing friendships</li> </ul>		9

		<ul style="list-style-type: none"> <li>• meet new people AW/widen social circle</li> <li>• form new friendship groups</li> <li>• develop social skills</li> </ul> <p>Psychological benefits:</p> <ul style="list-style-type: none"> <li>• regular exercise will help Simon reduce the effect of stress/ reducing his blood pressure/reducing the risk of cardiac arrest AW</li> <li>• will improve his concentration span/improved decision making/helping him cope better at work</li> <li>• may help him sleep better AW/so he feels less tired/lower his anxiety levels – feel calmer</li> <li>• also less likely to have indigestion/palpitations/”muscular” aches and pains</li> <li>• reference to endorphins AW/developing feel good factor – (self) confidence – self-esteem</li> <li>• but may add another “burden” – demand/increased pressure on Simon if he cannot find time AW</li> </ul> <p>Candidates who display appropriate knowledge and understanding and display higher QWC skills should be rewarded at the top of the mark band. However, those who display some confusion and weakness in QWC supporting knowledge and understanding should be placed at the bottom of the mark band.</p> <p><b>Mark Ranges</b></p> <p>0 marks No response worthy of credit.</p> <p>1 - 4 marks Generally vague and repetitive answers covering 1-5 points with little reasoning. Limited social and psychological benefits. There will be little use of appropriate terminology.</p> <p>5 - 7 marks More detailed responses covering 6-8 points with some reasoning and</p>		
--	--	---	--	--

			<p>use of appropriate terminology. Balanced discussion both social and psychological benefits included. Answers may lack precision but are organised.</p>		
		8 - 9 marks	<p>Answers cover 8+ or more points and are well structured and reasoned. There will be good use of appropriate terminology. Balanced discussion both social and psychological benefits included.</p>		