



General Certificate of Education

Health and Social Care 8626/8629

HC13

Mark Scheme

2007 examination - June series

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Question 1

- (a)(i) Genotypes/Genetics AW (1) presence/absence or example of (respiratory) disease/illness (1) (regularity/amount) of exercise performed/fitness level (1)
Not: disability max 2 **2 marks**
- (a)(ii) Ref to: a measure of aerobic fitness (1) measuring maximum O₂ uptake/aerobic power (1) (in Naomi's case poor/below average O₂ uptake and utilisation/ use energy release/respiration (1) in terms of O₂ usage – **per minute** (1) **per Kg of body weight** (1) max 4 **4 marks**
- (b) Ref to: Naomi's heart rate increases (1) with increased stroke volume AW (1) increasing cardiac output (1) with more blood flow to (skeletal) muscles (1) increased ventilation/breathing rate (1) due to increasing CO₂ in blood/decreasing blood pH (1) sweating (1) skin flushes AW/redness/shunt vessels open (1) max 5 **5 marks**
- (c) i) Re Naomi's stress levels the exercise will – reduce blood pressure (1) improve concentration span (1) improve decision making (1) improve sleeping pattern (1) lower anxiety/worries/calm/relaxed AW (1) may also prevent indigestion (1) palpitations (1) 'muscular' chest/pains (1) feel more able to cope AW (1) ref to chemical/e.g. endorphin released (1) enhances mood AW (1) max 7 **7 marks**
- ii) Ref to improved stamina AW (1) from greater muscle strength (1) withstanding fatigue/keep going/not tiring (1) Not: flexibility max 2 **2 marks**

Question 2

- (a) Allow gradual/gentle mark in any part (1)
Warming up will make Adrian's body ready for exercise by preventing injury (1) muscle soreness (1) by (gently) raising pulse (1) and cardiac output (1) and ventilation (1) increases O₂ delivery to muscles (1) helping reduce O₂ deficit at start of exercise (1) increases muscle temperature (1) blood vessels in muscles dilate (1) cellular respiration increases (1) muscle flexibility increases AW(1) mentally he will be prepared to exercise/motivate (1) max 8 **8 marks**
- (b) Ref to Adrian's body systems maintaining effectiveness Not: 'improving' ideas – but maintaining (1) but allow separate examples of these e.g. (maintaining) respiratory function AW (1) circulatory function (1) digestive function (1) muscles – skeletal function AW (1) strength maintained (1) mobility maintained (1) flexibility maintained (1) muscle/fibre loss delayed (1) reduces protein depletion (1) helps prevent Adrian from suffering from age-related diseases (1) allow egs DVT/strokes – thrombosis (1) blood pressure reduced (1) less risk of clots forming (1) atherosclerosis (1) blood cholesterol reduced (1) osteoporosis (1) Calcium deposition in bones maintained (1) keeps bones strong/dense (1) by clearing Adrian's mind AW (1) sleep

patterns improved (1) his metabolic rate will be maintained (1) max 12
 Allow explanation mark for named diseases e.g. atherosclerosis (1) maintains essential
 arterial elasticity/reduces plaque in blood vessels AW **12 marks**

Question 3

- (a)(i) BMI indicates – Adult W is lean/below average/normal (1) Adult Y obese/
 very overweight (1) Adult Y least fit (1)
 Adult X – average/normal (1) Adult Z average/normal (1)
 Adults X/Z – similar fitness (1) **4 marks**
- (ii) Peak flow indicates - Adult W in normal/average range (1)
 Adult X in average range (1)
 Adult Y in average range (1)
 Adult Z least fit
 Adult W/X/Y similar fitness (up to 2 for separate cf.)
 Adult Z possible asthmatic/respiratory problem/below
 normal/average (1) **4 marks**
- (iii) Resting pulse rates - Adult W in average range (1)
 Adult X below average range/(very) fit or may have heart disease
 (1)
 Adult W/Z similar fitness (1)
 Adult Y above average range/less fit (1)
 Adult Z in average range (1) **4 marks**
- (iv) Recovery times after identical exercise
 Adult X fittest (1)
 Adult Y least fit (1)
 Adults W/Z similar fitness (1)
 Adults W/Z more fit than Y (1) less fit than X (1) **4 marks**
- (b)(i) Tidal volume – amount of air inhaled/exhaled (1) per single breath (1) **2 marks**
- (b)(ii) Minute ventilation – tidal volume AW (1) multiplied by numbers of breaths
 per minute/breathing rate (1) **2 marks**

Question 4

- (a) Barriers – Family commitments/having two pre-school children (1)
 Costs/examples – gym fees/clothes/equipment (1)
 Low fitness level (1) Not embarrassment/facilities location/or cultural issues
3 marks
- Can be overcome by – exercising as part of housework regime (1) taking
 children for walks/taking part in energetic play (1)
 Exercise gently at first/small progression increments (1)
 Allow use video (1) join beginners class (1) **3 marks**
- (b) Any 4 of – seek medical advice/expert advice – prevent overexertion wear
 appropriate clothing (allow example) – prevent accidents/temp control/be comfortable

use appropriate equipment – prevent injuries
 warm down after exercise – prevent muscle soreness/stiffness
 use monitoring equipment correctly – plan progress appropriately
 max 4 principles and 4 different reasons

8 marks

(c) (i) Socially – Rhona may meet new people when exercising AW/interact/social contact
 (1)

make new friends (1) develop social skills (1)

3 marks

(ii) Raise self esteem – Rhona will develop a positive mental attitude (1)
 develop (self) -confidence (1) through losing weight (1)develop 'feel good'/'happy'
 factor (1) due to regular exercise stimulating chemical secretions (1) endorphins/
 entrephalins/analgesics/serotonin (1) sense of social belonging (1)
 max 3

3 marks

Paper Total 80 marks

	<u>AO1</u>	<u>AO2</u>	<u>AO3</u>	<u>AO4</u>
1ai		2		
ii	4			
bi		5		
ii	5	4		
2a	4	4		4
b	5	3		
3ai			2	2
aii			2	2
aiii			2	2
aiv			2	2
bi	2			
bii	2			
4a			6	
b			4	4
c			2	4