



**General Certificate of Education**

**Health and Social Care  
8621/8623**

**HC13**

**Mark Scheme**

*2008 examination – June 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.

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## Quality of written communication

The quality of written communication is assessed in all assessment units where candidates are required to produce extended written material. Candidates will be assessed according to their ability to:

- Select and use a form and style of writing appropriate to purpose and complex subject matter
- Organise relevant information clearly and coherently, using specialist vocabulary when appropriate
- Ensure that text is legible, and that spelling, grammar and punctuation are accurate, so that meaning is clear.

The assessment of quality of written communication must be included in questions **1(a)i, 2(a), 3(a)i, 4(b)iii**

## HC13 Mark Scheme

1			
ai)	VO <sub>2</sub> max (1) (O <sub>2</sub> uptake) and use ml/millilitre per minute (1) per kilogram/kg of body weight (1)	3 marks	
aii)	Ref to Karin's external respiration AW/breathing/vital capacity/lung capacity/oxygen intake improving (1) lung surface area increasing (1) to increase O <sub>2</sub> diffusion (1) into blood (1) more effective transport to cells (1) through increased blood carrying capacity AW (1) less stress on heart muscle (1) improves stamina AW (1) improved O <sub>2</sub> /metabolism/use of O <sub>2</sub> respiration AW in cells/tissues/muscles (1) as muscles increase in size/become more effective (using O <sub>2</sub> ) (1) faster O <sub>2</sub> debt recovery AW (1)	max 7	7 marks
b)	Ref to: stamina (1) maximum strength (1) dynamic strength/power (1) Allow strength for 1 mark if mobility (1) flexibility (1) No other mark.	Max 3	3 marks
c)	Ref to: Karin may have – improved concentration span (1) better decision making/be clearer thinking AW (1) have reduced/maintain blood pressure at 'normal' levels AW (1) improved sleep (1) less anxiety/worry AW more relaxed/calmer(1) help prevent indigestion (1) palpitations (1) 'muscular' aches/pains (1) ref to improving physical/intellectual/emotional/social aspects of stress (1) Ref to endorphins/serotonin/enkephalins/chemicals in brain (1) Causing 'feel good'/mood changes AW (1)	max 7	7 marks
			<u>Total 20 marks</u>

2

- a) Ref to: regular exercise **slowing** body system deterioration AW (1)  
 allow examples: reducing/slowing loss of respiratory capacity AW (1)  
 help maintain/slow loss of muscle strength (1) stamina (1) by delaying  
 muscle loss (1) muscle/fibre loss (1) maintain/slow loss of flexibility (1) by  
 stretching ligaments (1) tendons (1) maintain/slow loss of calcium (1)  
 for bone strength/density (1) preventing osteoporosis (1)  
 maintain/slow loss of cardiac output (1) maximum heart rate (1)  
 reducing rise in/keeping blood pressure stable (1) reducing risk of blood  
 clots (1) reducing (blood) cholesterol levels LDL:HDL (1) reducing atherosclerosis atheroma (1)  
 risk of heart disease (1) maintaining/slowing loss of metabolic rate (1) helps  
 reduce tensions (1) maintain sleeping patterns (1) maintain/slow loss of  
 concentration (1) elasticity of arteries/blood vessels maintained (1)  
 Not improved/more/stronger ideas

max 9 9 marks

- b) Ref to any 3 of: be checked medically or take expert advice/wear appropriate  
 clothing or footwear/perform warm up programme/obtain correct  
 monitoring equipment.  
 Not warm up and cool down.  
 Mark first 3 attempts

max 3 3 marks

Linked reasons include: to prevent overexertion/accident – injury/maintain  
 comfort/allow movement to be unrestricted/keep warm – cool/lose sweat.

- c) Ref to: regular exercise suppresses appetite (1) lowering  
 risk of overeating/weight gain (1) eat less (1) possible role of appestat (1) in  
 hypothalamus/brain (1) receiving information from blood (1) regular exercise  
 improves appestat function AW (1) reducing psychological desire AW for food (1)

max 5 5 marks

3

- ai) Ref to: all three individuals feel increased effort over the 5 minutes AW (1)  
broadly similar effort levels at start/1 min (1)  
Person A and Person C have similar pattern of effort (1) may be similar fitness level (1)  
Person B finds exercise less demanding compared to other two (1) may be fitter AW (1)  
Not – 1, 2, 3 in order i.e. B – C – A.
- Allow ‘numerical’ example e.g. effort levels rise for A/C – 5 points over 5 minutes (1) Person B only 2 point rise (1) or similar comparison points for max 2 marks max 6      6 marks
- aii) Ref to strength: gives overall perception of effort (not one aspect)/ shows progression in effort level (1) 1 mark  
Ref to limitation: subjective measure AW/perceptions may vary – not good for comparisons between individuals  
Not easy/quiet 1 mark
- bi) Ref to: use spirometer (1) to measure amount of air AW exhaled/ inhaled (1) in single breath (1) 3 marks
- ii) Ref to: weight in kilograms kg (1) divided (1) by height in metres squared (1) 3 marks
- ci) Person A is overweight/not very overweight/obese(1) 1 mark
- ii) Person B is lean/underweight (1) 1 mark
- iii) Ref to: Take resting pulses (1) perform identical exercise AW (1) record pulse after exercise stopped (1) at set intervals or e.g. (1) until pulse returns to rest (1) the faster the recovery the fitter the person or vice versa (1) max 4 4 marks
- Total 20 marks

4a)	Ref to: work – family-time commitments (1) – overcome by walking to work/ taking part in physical play with family/doing housework tasks at home (1)	2 marks
	Ref to: costs – or examples of fees etc. (1) do free activities – example walk/ jog/leisure centres (1)	2 marks
	Ref to: low skill- fitness levels or self-conscious/embarrassed to physical appearance (1) – join beginners group/exercise with friend/exercise at home (1)	2 marks
	Ref to: lack of local facilities or example (1) exercise at home/do free activity or example (1)	2 marks
	Ignore transport unless qualified with facilities location. Ref to cultural/religious/beliefs (1) – single sex gym sessions/home DVDs (1)	<u>Max 6 marks</u>
bi)	Ref to: heart disease AW/cerebral infarction (stroke)/type 2 diabetes/ obesity	max 2 2 marks
ii)	Ref to: type 1 diabetes/osteoporosis/hypertension Allow diabetes/obesity	max 2 2 marks
iii)	Ref to heart disease – cardiovascular effects (1) e.g. maintaining arterial elasticity AW (1) preventing fatty deposits/plaque formation (1) atherosclerosis (1) increases HDL:LDL (1) overall lowers blood cholesterol (1) Ref to strokes – reducing blood pressure (1) improving circulation AW (1) preventing blood clots (1) or bleeding/bursting blood vessels/internal bleeding (1) Ref to type 2 diabetes – exercise uses sugar (1) helps reduce weight gain (associated with type 2 diabetes) (1) lowers blood sugar (1) preventing sugar excretion (1) ref to conversion to glycogen AW (1) liver and muscles (1) – cells not absorbing glucose AW (1) Ref to obesity – uses up fat stores (1) lowers weight and pressure on joints (1) less risk hernias (1) gall bladder diseases (1) Ref to type 1 diabetes – using sugar (1) to reduce blood sugar (1) less insulin needed (1) allow glycogen (P) liver/muscle energy supply AW (1) Ref to osteoporosis – weight bearing exercise (1) increases bone density (1) by 1-2% (1) due to calcium deposition (1) Ref to hypertension – resting blood pressure lowered (1) by maintaining arterial elasticity (1) reducing heart strain (1) Allow valid point not linked to specific diseases.	max 10 10 marks <u>Total 20 marks</u>
<u>Paper total 80 marks</u>		