



General Certificate of Education

**Health and Social Care
8626/8629**

HC13

Mark Scheme

2009 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.

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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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.

- 1ai) Ref to good aerobic fitness being: the ability to endure/sustain work stamina AW (1) by the body being able to take in oxygen (1) transport it to cells/muscles/tissues (1) use it/metabolise/energy release respire (1) efficiently/with ease AW (1) high VO₂ max (1) allow ref to working beyond 12 mins (1) max 4 4 marks
- a ii) Any two of: Age/Gender/Genetics/presence – absence **respiratory** disease 2 marks
- b) Ref to Monty's – increased heart rate AW (1) stroke volume (1) cardiac output AW (1) increased blood flow to (skeletal) muscles (1) increased ventilation (1) due to CO₂ increase in blood (1) decreasing blood pH (1) max 5 5 marks
- c) Dynamic strength – power (1) ability of neuromuscular system (1) to overcome resistance (1) with high speed muscle contraction (1) example – sprinting/weight lifting/jumping/throwing **fast** running (1) 5 marks
- d) Ref to Monty's self esteem being raised by: a positive mental attitude (1) by achieving targets/goals AW (1) developing (self) confidence (1) and 'feel good' factor AW (1) by developing good body image (1) by chemicals/endorphins/enkephalins/serotonin (1) secreted by nerve endings (1) max 4 4 marks
- 2ai) Ref to exercise: suppressing appetite AW (1) lowers risk of overeating/less time or opportunity to snack AW (1) and consequent weight gain (1) by slowing digestion (1) ref to appostat (1) in hypothalamus/brain (1) max 4 4 marks
- a ii) Ref to energy equation: energy input (from food) (1) in comparison to energy output (during exercise) (1) if equal weight maintained (1) allow marks in form of equation.
if input exceeds output (1) weight gain (1) OR
if output exceeds input (1) weight loss (1) 5 marks
- bi) Ref to warming up correctly before exercise:
prepare mind AW(1) prevent injury or example strains/pulls (1) prevent muscle soreness (1) gently raise pulse (1) increasing cardiac output (1) through heart rate (1) stroke volume (1) ventilation rate increased (1) to increase O₂ delivery (1) to (skeletal) muscles (1) reducing O₂ deficit (1) muscle temperature increased (1) blood vessels in muscles dilate (1) cellular respiration AW increased (1) muscle flexibility improved AW (1) max 7 7 marks
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- bii) Ref to wearing the appropriate clothing being important for comfort (1)
 helping maintain body temperature AW e.g. keeping warm/cool (1)
 allowing sweat to evaporate (1) allowing free range of movement AW (1)
 without causing accidents e.g. being too loose-catching in equipment (1) max 4
 injury 4 marks
- 3ai) Ref to Male W – higher than normal AW/ may be unfit (1)
 Male X – below normal range/may be very fit (1)
 Male Y – in normal range/60 – 80bpm (1)
 Male Z – in normal range/60 – 80bpm (1)
 Allow Y/Z similar if not awarding both marks here 4 marks
- a ii) Any of the following Male W: does not recover by 10 mins (1)
 Male Y: does not recover by 10 mins (1)
 Both W and Y relatively unfit (cf X and Z) (1)
 Allow single cf e.g. W less fit than X/Z (1)
 Y less fit than X/Z (1)
 Male X: recovers by 9 mins (1) fittest (1)
 Male Z: recovers by 10 mins (1) fitter than W/Y or less fit than X (1)
 Males W/Y similar pattern rate rise/highest rises until min 5/41bpm (1)
 Male X least rise (until 5 min)/28bpm (1)
 Male Z more than X/less than W or Y/32bpm (1) max 8 8 marks
- b i) Male Y's peak flow: may indicate respiratory problem/asthma (1) as reading
 below 'normal' value/low reading (1) below 350 dm³/min (1) allow may be
 small individual (1) max 2 2 marks
- bii) Ref to peak flow meter/spirometer (1) ensure scale on zero AW (1) uses
 disposable cardboard sleeve/ clean/sterile mouthpiece (1) individual blows into mouthpiece (1)
 single blow AW (1) hard as possible (1) reads scale (1) max 4 4 marks
- c) Minute ventilation is: volume air inspired/expired (1) in one minute (1) or
 tidal volume (1) times number of breaths (1) 2 marks
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|---|--|---------------|
| <p>4a) <u>Barrier – 1 mark</u>
 Work commitment

 Overweight/self conscious/

 Leisure centre 6 miles away/
 Change buses/doesn't drive AW

 Membership expensive/
 little spare cash

 4 marks</p> | <p><u>How overcome – 1 mark</u>
 Walk/cycle to work/exercise at
 work – use stairs
 Join beginners class/exercise with
 friend/walk/jog

 Do 'free' exercise – walk/cycle to
 leisure centre

 Exercise at home – housework/walk/
 jog/have exercise video

 4 marks</p> | Total 8 marks |
|---|--|---------------|
- b i) Named diseases: Type 1 diabetes Type 2/obesity/ osteoporosis/hypertension
 CHD/Asthma/stroke 3 marks
- bii) Type 1 diabetes: exercise uses up sugar (1) reduces blood sugar/glucose level (1)

less risk of sugar/glucose excretion (1) less risk 'hypo' AW (1) max 3
Type 2 diabetes as for Type 1 with ref reducing pressure on insulin (1) Allow ref glycogen
glucogen 3 marks

Osteoporosis: muscles strengthened (1) less risk falls/bone breaks (1)
bone density maintained (1) calcium loss slowed (1) especially if weight
bearing exercise (1) max 3 3 marks

Hypertension: resting blood pressure reduced (1) plaque build up/atherosclerosis atheroma
less risk (1) arterial wall elasticity maintained AW (1) ref both systolic/
diastolic pressures reduced (1) reduces heart attack risk AW (1)
CHD – atherosclerosis AW (1) Coronary arteries/vessels (1)
Heart muscle/cells do not die/O₂ supply maintained (1) cardiac max 3
Thrombosis/stroke – improved blood circulation (1) less atherosclerosis AW (1) reduced clotting
risk (1) arteries more elastic (1)
Obesity – energy equation points/energy from food (1) reducing weight (1) metabolism increases
(1) less risk of weight related – examples less joint damage / lowered blood pressure (1) asthma
– improved breathing (1) by stronger intercostal muscles (1) easier airway dilation (1)
3 marks

Paper Total 80 marks

	AO1	AO2	AO3	AO4
1ai	1	1		2
aii		2		
b	2	3		
c	2			3
d		2	2	
2a	2	2		5
bi	3			4
bii	2			2
3ai			4	
aii			8	
bi			2	
bii	4			
c				2
4a		4	4	
bi	3			
bii	3	4		2
TOTAL	22	18	20	20
%	27.5	22.5	25	25