



General Certificate of Education

Advanced Level

Specimen Paper

Health and Social Care

HSC07 Food and Fitness

Unit 7

Mark Scheme

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 students' 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 students' 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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Mark Scheme - HSC07 Specimen Paper

Quality of written communication

The quality of written communication is assessed in all assessment units where students are required to produce extended written material. Students 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.

1(a) VO_2 max measures **aerobic** fitness (1) in terms of the maximum capacity AW (1) to take in oxygen (1) transport it (1) and use it in cellular respiration AW (1) Diane has a low VO_2 max so therefore has poor/below average oxygen uptake and use (1) units ml/kg/min – millimetres of oxygen/kilograms of body weight/minute (1)
Allow – ability to endure/sustain work for very long periods/stamina (1)

Max 5 (5 marks)

1 (b) The body can take in O_2 (1) transport it to cells and tissues (1) utilise it (1) efficiently/with ease AW (1) to sustain work for long periods/endurance high AW (1) refer to working beyond 12 minutes (1)

Max 3 (3 marks)

1 (c) Refer to digestion of carbohydrate (1) results in glucose being absorbed into the blood stream (1) glucose is stored as glycogen AW (1) long chains of glucose molecules (1) stored in the liver and muscle cells (1) the glucose will combine with oxygen to create energy (1)

Max 5 (5 marks)

1 (d) **Functions** - Any 2 from Haemoglobin count in blood(1) transportation of oxygen around body(1) prevention of anaemia(1)

Max 2

Effect of deficiency – red blood cells are formed with insufficient haemoglobin molecules (1) blood cannot carry sufficient oxygen to the body cells (1) muscles are easily fatigued (1) heart beats faster (1) person is tired and listless(1)

Max 3

(5 marks)

1 (e) **Sources of iron** – Any 2 from liver, kidney, heart (1) eggs (1) bread (1) green leafy vegetables (1) fortified breakfast cereals (1)

(2 marks)

2(a) Likely points will include:

- regular exercise emotionally benefitting individuals by enhancing mood-feel good AW
- by stimulating endorphins/enkephalin/serotonin secretion/in the brain from nerve endings
- helps also raise confidence/self-esteem
- especially if lose weight
- maintain 'ideal' weight
- achieve body shape they want
- reduce stress
- benefits individuals socially if exercise activities involve others

- provides opportunities to interact/meet new people
- exercise with likeminded/common interest
- social support
- approval individuals
- helps develop new friendships
- maintain existing friendships
- develop social skills

Answers **must** show an equal balance of details relevant to emotional and social well-being, with no more than 3 marks being awarded for each category.

(6 marks)

- 2(b) Ref to warm-down programmes helping prevent injuries (1) if stopping strenuous exercise suddenly (1) less risk of cramp/discomfort/soreness (1) by clearing lactic acid from muscles (1) reduction of oxygen debt (1) maintaining a higher metabolic rate(1) prevents dizziness (1) from reduced blood pressure (1) insufficient oxygen reaching the brain (1) prevents blood pooling in veins (1) Max 5 (5 marks)

- 2(c) Likely points will include –
- ageing naturally causes a loss of effectiveness in body systems
 - regular exercise helps delay- slows the rate of decline – maintains body system effectiveness
 - this may be different for different individuals
 - for the respiratory system
 - lung capacity will decrease/regular exercise helps maintain lung capacity AW
 - musculo-skeletal system
 - loss of strength/loss of stamina – endurance/helps maintain metabolic rate/energy levels of the individual
 - speed of movement
 - flexibility/bone density reduced/maintains bone density through calcium deposition/lowers chance of osteoporosis AW
 - for circulatory systems cardiac output AW reduced
 - blood pressure rises/resting blood pressure reduced/reduced risk of clotting thrombosis AW
 - level of blood cholesterol reduced/reduces atherosclerosis-atheroma-plaque AW
 - reduces protein depletion in muscles/maintains flexibility strength and elasticity of muscles and ligaments

Mark Ranges

0 No response worthy of credit

1-3 marks Generally vague repetitive answers covering 1-3 points with little, if any, physiological detail. There will be little use of appropriate terminology.

Students who deploy appropriate knowledge and understanding and display higher QWC skills should be rewarded at the top end of this mark band. Conversely, those who display some confusion and weakness in QWC supporting knowledge and understanding should be placed at the bottom end of this mark band.

- 4-6 marks More detailed responses covering 4-6 points in some physiological detail. There will be some use of appropriate terminology and answers will be organised but lack some precision. Students who deploy appropriate knowledge and understanding and display higher QWC skills should be rewarded at the top end of this mark band. Conversely, those who display some confusion and weakness in QWC supporting knowledge and understanding should be placed at the bottom end of this mark band.
- 7-9 marks Answers cover 7 or more points in good physiological detail and are well structured. There will be good use of appropriate technical terminology. Students who deploy appropriate knowledge and understanding and display higher QWC skills should be rewarded at the top end of this mark band. Conversely, those who display some confusion and weakness in QWC supporting knowledge and understanding should be placed at the bottom end of this mark band.
- (9 marks)
- 3(a) **Peak Flow**
 Adult W – below normal result (1) may be least fit/asthmatic/respiratory problem (1)
 Adults X/Y/Z – in normal range (1) Allow Adult Z may be biggest (1) Y smallest (1). Not relative fitness X/Y/Z
Max 4 (4 marks)
- 3(b) **BMI calculations**
 Adult W – less lean/underweight (1)
 Adult X – obese AW (1) very overweight/maybe very muscular (1)
 Adult Y – normal range (1)
 Adult Z – normal range (1)
Max 4 (4 marks)
- 3(c) **Resting pulse rates**
 Adult W – normal range (1)
 Adult X – normal range (1)
 Adult W/X/Z similar fitness (1)
 Adult Y – above normal range (1) least fit (1)
 Adult Z – normal range (1)
 No credit of W/Y/Z which suggest relative fitness values with comparisons to each other.
Max 4 (4 marks)
- 3(d) **Recovery times**
 Adult W – with Y – least fittest (1)
 Adult X – fittest of the four AW (1)
 Adult Y – with W – similar fitness (1)
 Adult Z – second fittest of the four AW (1)
 No credit if contradictions made in any part of the answer.
Max 4 (4 marks)
- 3(e) BMI strength – standardised data/easy to measure (1)
 BMI limitation- does not differentiate between fat and muscle for high values (1)
(2 marks)
- 3(f) System is the nervous system (1) and process is homeostasis (1)
(2 marks)

- 4(a) Barriers – 1 mark for each of the **three** barriers given. + May be overcome by – 1 mark for each suggestion. Must be linked to the barrier.

Likely answers:

Costs e.g. gym membership/fees (1)
Skill/fitness level (1)

Facility location (1)

Family commitments (1)
Cultural attitudes or e.g. gender
mixed exercise (1)

Exercise for 'free' e.g. walk, run DVD (1)
Use beginners class/exercise with friend at home (1)

Exercise at home – housework/walk locally –to
Transport (1)

Exercise with family members (1)
Separate gender classes/gym services/
exercise at home (1)

Max 3+3 = 6 (6 marks)

- 4(b) Answers are likely to refer to Stephen's hypertension being helped by regular exercise improving arterial elasticity/by stretching arterial muscle walls/ which reduces resting blood pressure/both systolic/ and diastolic pressures/so reducing atherosclerosis/atheroma/plaque AW/reducing blood cholesterol/helping HDL:LDL balance/improving blood flow/through less arterial resistance.

Point out that regular exercise will improve or regulate Stephen's type 1 diabetes by using up energy/from carbohydrates – sugars/ which reduces insulin demand/making it easier for Stephen to regulate blood sugar levels/and less need for liver/muscles / to convert glucose/to glycogen.

Mark Ranges

0 Marks No response worthy of credit

1-3 marks Answers show some relevant knowledge of the impact of regular exercise on hypertension and type 1 diabetes but will be brief and lacking detail. Effects will tend to be stated rather than discussed e.g. regular exercise lowers blood sugar but no discussion on how this is achieved.

Students who deploy appropriate knowledge and understanding and display higher QWC skills should be rewarded at the top end of this mark band. Conversely, those who display some confusion and weakness in QWC supporting knowledge and understanding should be placed at the bottom end of this mark band.

4-6 marks Answers give a reasonably coherent account discussing in some detail how regular exercise might improve or regulate hypertension and type 1 diabetes e.g. blood sugar levels reduced as glucose used to supply energy. There is some relevant technical terminology.

Students who deploy appropriate knowledge and understanding and display higher QWC skills should be rewarded at the top end of this mark band. Conversely, those who display some confusion and weakness in QWC supporting knowledge and understanding should be placed at this bottom end of the mark band.

7-9 marks Answers are coherent and well-structured discussing good physiological detail on how hypertension and type 1 diabetes might be improved or

regulated e.g. blood sugar levels reduced as exercise increases energy demand so cellular respiratory rate in muscle tissue increases metabolism of glucose. Relevant technical terminology is correctly used.

Students who deploy appropriate knowledge and understanding and display higher QWC skills should be rewarded at the top end of this mark band. Conversely, those who display some confusion and weakness in QWC supporting knowledge and understanding should be placed at the bottom end of this mark band.

(9 marks)

- 4(c) Ref to Stephen needing medical check/expert advice to determine safety (1) a very gentle/low intensity exercise to begin (1) with small progression steps AW increasing demand (1) reduce intake of food (1) eat three balanced meals a day (1) suitable suggestions – low impact – walking/swimming/cycling (1) with monitoring of progress/demand AW (1) Allow ref to minimum high intensity work (1) concentrating instead on endurance (1) diet suggestions – do not cut out any food groups (1) reduce calories whilst increasing exercise(1)

Max 5

(5 marks)

HSC07 ASSESSMENT OBJECTIVE GRID

Question	AO1	AO2	AO3	AO4	Totals
1 (a)	1	4			5
1 (b)		2			2
1 (c)	2	3			5
1 (d)	2	3			5
1 (e)	2				2
2 (a)		4	1	1	6
2 (b)	2			3	5
2 (c)				9	9
3 (a)			4		4
3 (b)			4		4
3 (c)			4		4
3 (d)			4		4
3 (e)		2			2
3 (f)	2				2
4 (a)	6				6
4 (b)	2			7	9
4 (c)	3		3		6
Totals	22	18	20	20	80
Percentage	27.5%	22.5%	25%	25%	100%