



**General Certificate of Education (A-level)
January 2013**

Physical Education

PHED1

(Specification 2580)

**Unit 1: Opportunities for and the effects of
leading a healthy and active lifestyle**

Final

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 events which all examiners 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 examiner understands and applies it in the same correct way. As preparation for standardisation each examiner 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, examiners encounter unusual answers which have not been raised they are required to refer these to the Principal Examiner.

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Section A

Applied Exercise Physiology

Question 1

1 (a) (i) What do you understand by the term balanced diet? (1 mark)

A. <i>Sufficient/enough/correct amount of each component</i>	1	<i>Idea of correct rather than lots</i>
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1 (a) (ii) Briefly explain how **two** different named classes of food in an athlete's diet will aid his/her performance. (2 marks)

<p>A. <i>Sufficient carbohydrates for energy</i> B. <i>Sufficient fats for energy</i> C. <i>Sufficient protein – (muscle) growth/repair development</i> D. <i>Sufficient minerals – bone formation/muscle function/increased (energy) metabolism/electrolyte balance/blood formation/equiv</i> E. <i>Sufficient vitamins – increased (energy) metabolism/blood formation/equiv;</i> F. <i>Sufficient water – medium for reactions/lubricant/regulate temperature/avoid dehydration</i></p>	2	<p>First two answers What and why</p>
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1 (b) Describe **two** characteristics of veins which assist the transport of blood. (2 marks)

<p>Veins: A. <i>Thinner muscle/elastic tissue layer</i> B. <i>Valves</i> C. <i>Wider lumen/diameter</i> D. <i>Blood at low pressure</i></p>	2	<p>First two answers A. <i>Not just thinner</i></p>
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1 (c) (i) Explain how redistribution of blood occurs during exercise. (3 marks)

<p>A. Increase in CO₂ levels/acidity/ decrease in O₂ levels/pH/ chemoreceptors B. Movement of joints/tendons/ mechanoreceptors/proprioceptors C. Vasomotor centre/medulla D. Autonomic/sympathetic nervous system/(nor)adrenaline E. Pre-capillary sphincters/rings of circular/smooth muscle F. Vasodilation to areas needing blood/muscles G. Vasoconstriction of areas not needing so much blood/kidneys/liver/ gut</p>	<p>3</p>	<p>Terms need explaining F. and G. Term and location</p>
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1 (c) (ii) Explain why blood flow to the brain remains the same during rest **and** during maximum effort. (2 marks)

<p>A. Brain function maintained during exercise B. Oxygen/nutrients required</p>	<p>2</p>	<p>Brain active/working = OK</p>
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1 (c) (iii) Using **Table 1**, explain why performers should not eat immediately before exercise. (2 marks)

<p>A. During exercise, <u>less</u> blood goes to the gut/change from 1250cm³ to 375cm³ B. But, blood/oxygen needed in gut for digestion of food C. Less blood/oxygen available to muscles</p>	<p>2</p>	<p>A. credit use of table to suggest reduced gut blood B. 'unable to digest food' is incorrect</p>
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Question 2

2 (a) (i) Using **Figure 1**, complete **Table 2** to identify the main agonist, the joint action **and** the type of contraction at the right **ankle** when moving from Position **A** to Position **B**. (3 marks)

<p>A. Agonist – gastrocnemius B. Joint action – plantar flexion C. Type of contraction – concentric/ isotonic</p>	<p>3</p>	<p>First answer only Accept slight spelling lapses A. Not calf or soleus B. Not flexion or dorsi-flexion C. Not eccentric, isometric or isokinetic</p>
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- 2 (a) (ii) State **one** mechanical advantage and **one** mechanical disadvantage of the lever system that is being used at the right ankle as the runner in **Figure 1** moves from Position **A** to Position **B**. (2 marks)

<p>Advantages</p> <p>A. Larger forces generated/longer force/effort arm</p> <p>B. Easy to move heavy/large weight</p> <p>Disadvantages</p> <p>C. Limited range of movement</p> <p>D. Limited/reduced speed of movement</p>	2	<p><i>Must be identified as advantage or disadvantage</i></p> <p><i>Sub max 1 mark</i></p> <p><i>Sub max 1 mark</i></p>
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- 2 (b) Complete **Table 3** below to show how the tidal volume, inspiratory reserve volume **and** expiratory reserve volume change during exercise. (3 marks)

<p>A. Tidal volume – increases</p> <p>B. Inspiratory reserve volume – decreases</p> <p>C. Expiratory reserve volume – decreases</p>	3	<p><i>Accept equivalents to increase and decrease</i></p>
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- 2 (c) Explain how the gas exchange system operates at muscles. (4 marks)

<p>A. Process of <u>diffusion</u> – high concentration/partial pressure to low/down a diffusion gradient</p> <p>B. Requires thin/permeable membranes/short distance</p> <p>C. High pO_2 in blood/low pO_2 in muscles <u>and</u> oxygen moves into muscles</p> <p>D. Low pCO_2 in blood/high pCO_2 in muscles <u>and</u> carbon dioxide moves into blood</p> <p>E. Oxygen into myoglobin/ (disassociates) from haemoglobin</p> <p>F. Carbon dioxide dissolves in plasma/ combines with haemoglobin/forms bicarbonate ion</p>	4	<p>A. Diffusion explained</p> <p>B. Only if one or more of these present</p> <p>C. and D. Accept concentration as equiv to pO_2</p> <p>C. and D. Accept capillaries, blood vessels, etc</p>
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Skill Acquisition

Question 3

3 (a) Suggest **three** other characteristics of skill. (3 marks)

<p>A. <i>Consistency/repeatable <u>success</u>/few mistakes/maximum certainty</i> B. <i>Coordinated/controlled</i> C. <i>Fluency/flowing/smooth</i> D. <i>Adaptable</i> E. <i><u>Aesthetically pleasing</u></i> F. <i>Goal orientated behaviour/predetermined results</i> G. <i>Precise/Accurate/Correct</i></p>	<p>3</p>	<p>If more than three answers given, only credit first answer on each line</p> <p>D. Able to change skill E. Key term. Do not accept aesthetic</p>
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3 (b) (i) Use examples to distinguish between the different types of reinforcement. (3 marks)

<p>A. <i>Positive <u>and</u> negative reinforcement</i> B. <i>Positive - Use of praise/rewards/self-satisfaction to encourage correct behaviour</i> C. <i>Negative - Removal of criticism/unpleasant stimulus to encourage desired response/eg coach stops shouting</i></p>	<p>3</p>	<p>Punishment = wrong! Answers will invariably be positive = ... and negative = ... = 3 marks. Candidates who correctly identifies positive and punishment will only get 1 mark</p>
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3 (b) (ii) Apart from reinforcement, how else could a coach make sure that operant conditioning is likely to result in successful learning of a new skill? (3 marks)

<p>A. <i>Use of punishment</i> B. <i>Correcting mistakes/equiv</i> C. <i>'Trial and error' learning</i> D. <i>Manipulating the environment to obtain desired response</i> E. <i>'Shaping'</i> F. <i>Eg use of target areas/feeders/equipment/etc;</i></p>	<p>3</p>	<p>C. <i>Key term</i></p> <p>E. <i>Key term</i></p>
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3 (c) What are the benefits of goal setting? (3 marks)

<p>A. <i>Improved confidence/self-efficacy</i> B. <i>Increased motivation/drive</i> C. <i>Task persistence/want to keep trying</i> D. <i>Reduced anxiety/more relaxed/equiv</i> E. <i>Focuses attention/concentration/improved selective attention</i> F. <i>Approach behaviours</i></p>	3	<p>B. <i>Key terms</i></p>
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Question 4

4 (a) (i) Using examples, name the **two** different types of extrinsic motivation. (2 marks)

<p>A. <i>Tangible – badges/prizes/rewards/cups/medals, etc</i> B. <i>Intangible – Praise/peers/fans/crowd cheering/fame, etc</i></p>	2	<p>A and B – require name and example B. Accept personal best if in context, eg coach telling you that you've achieved it</p>
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4 (a) (ii) Explain the factors that can influence the effectiveness of attention, retention **and** motor production in observational learning. (4 marks)

<p>Attention</p> <p>A. <i>How attractive/successful/powerful or if action has actual benefits/functional/peer/role model/significant other</i> B. <i>Demonstration can be seen/is accurate/highlight key areas of the skill/details/cues</i></p> <p>Retention</p> <p>C. <i>Can the observer remember/keep the skill in memory/recall/mental image</i> D. <i>Demonstration is meaningful/relevant/realistic succinct and clear/use mental rehearsal</i></p> <p>Motor production</p> <p>E. <i>Performer has the physical capability/abilities/skills to complete the task</i> F. <i>Immediate opportunity to practice/break down complex skills/show progression</i></p>	4	<p>Stages must be identified</p> <p>Can only achieve max 4 if all three areas covered, therefore cannot achieve points A, B and C, D, or A, B and E, F, or C, D and E, F</p> <p>Accept opposites</p> <p>A. Do not accept that attention is paying attention C. Do not accept that retention is to retain</p>
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- 4 (b) (i)** When the players involved in a 2 v 1 situation are novices, the attack often breaks down. In terms of the input stage of information processing, explain why the attack may break down. (3 marks)

<p>A. <i>Information overload/too much to take in/too many stimuli</i> B. <i>Poor selective attention</i> C. <i>Focus on inappropriate/irrelevant stimulus/signals/cues</i> D. <i>Unable to focus on correct/relevant/appropriate signals/cues</i> E. <i>Unable to look to see both defender and support player</i> F. <i>Loss of concentration</i></p>	<p>3</p>	<p>B. 'selective attention' without context is incorrect</p>
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- 4 (b) (ii)** In terms of the psychology refractory period, explain why a 2 v 1 situation should cause a defender's response time to be slower. (3 marks)

<p>A. <i>Attackers select a move and defender must respond</i> B. <i>Initial stimulus is closely followed by a second stimulus</i> C. <i>Defender slowed by increasing decisions/choices/choice reaction time</i> D. <i>First stimulus must be cleared before the second one can be processed</i> E. <i>Hick's Law/single channel hypothesis/bottleneck theory</i> F. <i>To fake/dummy and beat the defender</i></p>	<p>3</p>	<p>Idea that defender follows attacker's move B. Idea that there are two stimuli</p> <p>D. Second stimulus only becomes relevant when the first stimulus is finished with</p>
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- 5 (c)** Currently, a national governing body for a sport produces a Whole Sport Plan. How does this benefit a sport? (5 marks)

<p>A. Grass roots to elite/equiv B. Increases participation/members/clubs C. Funding to that sport depends on success of plan D. Increase resources/funding for that sport E. From Sport England (UK Sport) F. Helps deliver Start, Stay, Succeed/ Grow, Sustain, Excel/Places People Play G. Increase number volunteers/qualified coaches H. Partnerships with PESSCL/PESSYP/CCDP/CSP I. Shared 'best practice' J. Measureable/increased performance at elite level/more medals/KPIs/talent ID</p>	<p>5</p>	<p>C, D and G – increased or more required D. Do not accept 'increased facilities'</p>
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Question 6

- 6 (a)** How does school sport differ from physical education? (3 marks)

<p>A. Sport – Extra-curricular/after school/lunchtimes <u>and</u> PE in lessons B. Sport – Structured/competitive/rules/winning <u>and</u> PE less so C. Sport – voluntary <u>and</u> PE compulsory D. Sport – for chosen/few <u>and</u> PE for all E. Sport – coach <u>and</u> PE teacher F. Sport – single/specialised activity <u>and</u> PE is many activities</p>	<p>3</p>	<p>Must give both sides of differences A. accept opposites from other points, eg 'sport after school but PE compulsory' B/C. Accept 'but PE is not'/eq</p>
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Question 7

You have been asked to improve the fitness and skill levels of a group of performers within an AS level Physical Education class.

Describe the main parts of a cool-down that should end a session and the benefits of that cool-down.

Massed and distributed practices can be used to develop skills. Explain why you might choose to use massed practice rather than distributed practice. (12 marks)

<p>Cool downs</p> <p><i>Method</i></p> <p>A. Reduce intensity of exercise B. Walk around/(light) jogging/aerobic activity C. Stretching D. Preferably/best to use static stretching</p> <p><i>Benefits</i></p> <p>E. Reduces heart rate F. Reduces body temperature G. Remove adrenaline/carbon dioxide H. Removes lactate/lactic acid I. Maintains <u>venous return</u> mechanism/skeletal/muscle pump J. Prevents blood pooling K. Reduces DOMS/muscle soreness L. Specific psychological benefit</p> <p><i>Factors concerning performer that affect decision:</i></p> <p>M. (Stage of learning) – Massed for autonomous performer/ distributed for cognitive performer N. (Fitness) – Massed for very fit performer/ distributed for less fit O. (Motivation) – Massed for highly motivated performer/distributed for less motivated</p> <p><i>Factors concerning task that affect decision:</i></p> <p>P. (Complexity) – Massed for simple skills/distributed for complex/strenuous Q. (Continuity) – Massed for discrete skills/distributed for continuous skills R. (Muscles used) – Massed for fine skills/distributed for gross skills S. (Time available) – Massed when time is limited/distributed when plenty of time available T. (Speed of action) – Massed for quick/rapid skills/distributed for long-</p>	<p>12</p>	<p>A. Equiv is slow down/etc B. Description of maintaining movement, eg keep moving</p> <p>C/D – ‘best to use static stretching’ = points C and D</p> <p>G. ‘Removes waste’ too vague</p> <p>K. DO NOT ACCEPT aches/pains L. Accept idea of reflecting on performance. DO NOT ACCEPT terms such as ‘relaxing’, ‘chilling’, ‘thinking’</p> <p>No need to state headings – use massed for autonomous performers is sufficient for point M</p> <p>M-U – ‘depends on fitness’ too vague. Must state circumstance for using massed or distributed</p>
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<p><i>lasting skills</i> <i>U. (Safety) – Massed when no danger/ distributed when potential danger</i></p>		
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Mark Scheme

Band Range	Band descriptors
10 – 12	<ul style="list-style-type: none"> • Addresses all aspects of question, demonstrating wide range of depth and knowledge • Expresses arguments clearly and concisely • Good use of examples to support answer • Few errors in their spelling, punctuation and grammar, and correct use of technical language
7 – 9	<ul style="list-style-type: none"> • Addresses most aspects of question, demonstrating clear level of depth and knowledge • Attempts to express arguments clearly and concisely • Uses examples to support answer • Few errors in their spelling, punctuation and grammar, and correct use of technical language, although sometimes inaccurately
4 – 6	<ul style="list-style-type: none"> • Addresses some aspects of question, but lacks sufficient depth and knowledge • Limited attempt to develop any arguments or discussions, normally vague or irrelevant • Attempts to use examples although not always relevant • Errors in spelling, punctuation and grammar, and limited use of technical language
1 – 3	<ul style="list-style-type: none"> • Addresses question with limited success • Little or no use of examples • Major errors in their spelling, punctuation and grammar, and little use of technical language