



**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

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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. Sufficient/enough/correct amount of each component	1	Idea of correct rather than lots
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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. Sufficient carbohydrates for energy B. Sufficient fats for energy C. Sufficient protein – (muscle) growth/repair development D. Sufficient minerals – bone formation/muscle function/increased (energy) metabolism/electrolyte balance/blood formation/equiv E. Sufficient vitamins – increased (energy) metabolism/blood formation/equiv; F. Sufficient water – medium for reactions/lubricant/regulate temperature/avoid dehydration</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. <u>Thinner</u> muscle/elastic tissue layer B. Valves C. Wider lumen/diameter D. Blood at low pressure</p>	2	<p>First two answers A. Not just thinner</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</p> <p>B. Movement of joints/tendons/ mechanoreceptors/proprioceptors</p> <p>C. Vasomotor centre/medulla</p> <p>D. Autonomic/sympathetic nervous system/(nor)adrenaline</p> <p>E. Pre-capillary sphincters/rings of circular/smooth muscle</p> <p>F. Vasodilation to areas needing blood/muscles</p> <p>G. Vasoconstriction of areas not needing so much blood/kidneys/liver/ gut</p>	<p>3</p>	<p>Terms need explaining</p> <p>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</p> <p>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</p> <p>B. But, blood/oxygen needed in gut for digestion of food</p> <p>C. Less blood/oxygen available to muscles</p>	<p>2</p>	<p>A. credit use of table to suggest reduced gut blood</p> <p>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</p> <p>B. Joint action – plantar flexion</p> <p>C. Type of contraction – concentric/ isotonic</p>	<p>3</p>	<p>First answer only</p> <p>Accept slight spelling lapses</p> <p>A. Not calf or soleus</p> <p>B. Not flexion or dorsi-flexion</p> <p>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	B. <i>Key terms</i>
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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	A and B – require name and example B. Accept personal best if in context, eg coach telling you that you've achieved it
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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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Opportunities for Participation

Question 5

- 5 (a) What are the similarities **and** the differences between sport and active leisure?
(3 marks)

<p>Similarities</p> <p>A. Both energetic/physical/health/fitness/equiv</p> <p>B. Both in free time/choice/voluntary</p> <p>Differences</p> <p>C. Sport competitive, active leisure (usually) less so</p> <p>D. Sport has more commitment/effort/training/serious, active leisure (usually) less so</p> <p>E. Sport has clubs/organisation, active leisure (usually) less so</p> <p>F. Sport has officials, active leisure (usually) self-regulated</p> <p>G. Sport has set rules/tactics, active leisure (usually) modified rules</p>	<p>3</p>	<p>Not 'active' Not 'leisure'</p> <p>C-G – accept 'sport has...active leisure doesn't...'</p>
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- 5 (b) Why were the boys in English public schools encouraged to play sport?
(4 marks)

<p>A. Occupy boy's free time/riotous behaviour/inappropriate activities</p> <p>B. Discipline/social control/safety</p> <p>C. Preparing boys for roles in society/leadership</p> <p>D. Develop <u>athleticism</u> among boys/physical endeavour and moral integrity</p> <p>E. Adherence to letter and spirit of sport/<u>sportsmanship</u>/fair play</p> <p>F. Promote <u>teamwork</u>/team building/loyalty to house/school</p> <p>G. Develop <u>muscular Christianity</u></p> <p>H. Character building</p>	<p>4</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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6 (b) What were the main aims of Sports Colleges? (4 marks)

<p>A. Provide <u>high quality</u> PE and school sport; B. Raise standards of pupils C. Improve amount/time of PE D. Meet government targets/minimum 2 hours per week E. Extra resources/activities/facilities/ teachers/coaches F. Involves local secondary and primary schools/competitions/festivals G. School Sports Co-ordinator (SSCo)/ Partnership Development Manager (PDM) H. PESSCLs/PESSYP/school-club links I. Community/(club) use</p>	4	<p>A. Needs to be produced almost verbatim E. Funding too vague – what for?</p>
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6 (c) Discuss the suggestion that disabled participants have equal opportunities to take part in sport. (5 marks)

<p>Yes A. Improve access to facilities/disabled sessions B. More competition/clubs/teams/activities/ adapted sports C. Increase numbers of specialised coaches/trained staff D. Improve numbers of/better specialist facilities/access ramps/technology E. Publicity/campaigns/increase media coverage/role models/Paralympics/ funding/sponsorship F. Increased awareness of needs/integrated into PE programmes/inclusiveness</p> <p>No G. Insufficient clubs/teams/competitions H. Access still a problem to/within sports facilities/special times/sessions for disabled I. Lack of qualified coaches/provision of specialist coaching J. Need greater use of campaigns/ promotion/paralympians/Special Olympians to inspire/role models/media coverage/lack of funding/sponsorship K. Lack of awareness of needs/abilities in specialised training/courses/PE Programmes</p>	5	<p>Key term is specialised/equiv, eg specialist coaches/facilities, etc A. Relates to transport D. Relates to within the facility – Not 'more facilities' Sub max 4 Sub max 4</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