



General Certificate of Education (A-level)
June 2011

Physical Education

PHED3

(Specification 2580)

**Unit 3: Optimising performance and evaluating
contemporary issues within sport**

Post-Standardisation

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 candidates' 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 candidates' 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

Question 1

- 01** Explain how a gymnast can alter the speed of rotation during flight **and** outline how plyometrics can assist in their preparation to achieve maximum lift at take-off.
(14 marks)

A good answer must address all parts of the question adequately, and should consider accurately the following topic areas

<p>Altering speed of rotation</p> <ul style="list-style-type: none"> A. Changing the shape of the body causes a change in speed B. Change in <u>moment of inertia</u> leads to a change of angular velocity/speed/spin of rotation/ angular moment; C. Angular momentum remains constant (during rotation) D. <u>Angular momentum = moment of inertia x angular velocity</u> E. <u>Angular momentum</u> - quantity of rotation/motion F. <u>Angular velocity</u> - speed of rotation G. <u>Moment of inertia</u> - spread/distribution of mass around axis/reluctance of the body to move H. To <u>slow down</u> (rotation) gymnast increases <u>moment of inertia</u> I. Achieved by extending body/opening out/or equivalent J. To <u>increase speed</u> (of rotation) gymnast <u>decreases moment of inertia</u> K. Achieved by tucking body/bringing arms towards rotational axis <p>Plyometrics</p> <ul style="list-style-type: none"> L. Description of activity – hopping/bounding/ depth jumping/medicine ball work M. Aim – develop power/speed/explosive strength N. Involves Fast Twitch Fibres/Type 2 O. <u>Eccentric</u> muscle contraction happens first P. <u>followed by concentric</u> contraction Q. Stretch Reflex activated R. Detected by the muscle spindles S. Sends nerve impulse to spinal cord/central nervous system/CNS/afferent impulses T. Elastic energy stored U. Protects over stretching of muscles/avoid injury V. Three phases – <u>stretch shortening cycle</u> 	<p>Accept annotated diagrams A – awarded for a general point on change in body shape and not to be credited with I and H unless a separate point is made</p> <p>H and I – comments needs to indicate a change of speed To achieve I, must have H</p> <p>To achieve K, must have J</p> <p>‘Strength’ is too vague</p> <p>To achieve P, must have O</p> <p>V – three phases are pre-stretch, amortisation and muscle contraction</p>
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The following table should be used to determine the mark.

Band Range	Band descriptors
Level 4 12-14 mks 16/17/18 points – 12 marks 19+ points – 13 marks + QWC – max 14 marks	<ul style="list-style-type: none"> Addresses all areas of the question, demonstrates a wide range of depth and knowledge Expresses arguments clearly and concisely Few errors in spelling, punctuation and grammar, correct use of technical language
Level 3 8-11 mks 11/12 points – 8 marks 13/14 points – 9 marks 15 points – 10 marks + QWC – max 11 marks	<ul style="list-style-type: none"> Addresses most areas of the question, demonstrates a clear level of depth and knowledge Attempts to express arguments clearly and concisely Few errors in spelling, punctuation and grammar, correct use of technical language although sometimes inaccurately
Level 2 4-7 mks 5/6 points – 4 marks 7/8 points – 5 marks 9/10 points – 6 marks + QWC – max 7 marks	<ul style="list-style-type: none"> Addresses some aspects of the question but lacks sufficient depth and knowledge Limited attempt to develop any arguments or discussions, normally vague or irrelevant Errors in spelling, punctuation and grammar, limited use of technical language
Level 1 1-3 mks 1/2 points – 1 mark 3/4 points – 2 marks + QWC – max 3 marks	<ul style="list-style-type: none"> Addresses the question with limited success Major errors in spelling, punctuation and grammar, little use of technical language
Level 0 0 mks	<ul style="list-style-type: none"> Addresses no aspect of the question

Question 2

02 Explain how the majority of energy is provided for these events. (7 marks)

7 marks for 7 of: A. Anaerobic/without oxygen B. (during first few seconds) stored ATP splits/breaks down initially/ATP breaks down to ADP + P + energy C. ATP-PC/system/phosphocreatine system/alactic system D. PC = C + P(i) + energy/creatine + phosphate/PC broken down; E. Energy used for ATP resynthesis/ADP + P + energy = ATP/ADP + PC = ATP + C; F. Lasts 5-10 seconds/limited supply G. Lactic acid system/Lactate anaerobic system H. Glycogen/glucose breakdown I. Glycolysis J. To pyruvate/pyruvic acid K. Lactate/lactic acid formed	<p>If discussion about aerobic energy system is included in the answer, no marks can be credited for the whole answer unless they clearly indicate that the system is involved after the completion of the routine during recovery</p> <p>G – Do NOT accept lactic system</p>
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Question 3

- 03** How can a performer vary the strength of muscular contractions to ensure that a skill is completed correctly? (4 marks)

<p>4 marks for 4 of:</p> <ul style="list-style-type: none"> A. (Greater the force needed) larger motor units recruited B. More units recruited C. Need fast twitch fibres rather than slow twitch fibres D. Multiple unit summation/spatial summation E. All or none law/All or nothing law/or explanation F. Wave summation/frequency of impulse/innervations G. Motor unit unable to relax/increase the force H. Tetanus/titanic for powerful contraction I. Muscle spindles detect changes in muscle length/speed of contraction J. Send information to brain/CNS K. Compares information to long term memory to ensure correct force applied/past Experiences L. Spatial summation – rotating the frequency of the impulse to motor units to delay fatigue 	<p>Accept reverse</p> <p>Accept reverse</p> <p>D – These terms must be explained and refer to technical name for points A and/or B</p> <p>E – Allow action potential/ threshold is reached, contraction occurs in all of the fibres in the motor unit</p> <p>Spatial summation can be credited twice with appropriate explanations</p>
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- 04** Describe the physiological reasons why a performer may use anabolic steroids. (3 marks)

<p>3 marks for 3 of:</p> <ul style="list-style-type: none"> A. Aid/use/assimilation storage of protein B. Decrease in fat in the muscles C. Able to train for longer/higher intensity D. Faster recovery time/to train more frequently/ <u>quicker</u> repair of muscle tissues E. Increase muscle size/strength/mass 	<p>Do not accept increase endurance or perform longer</p>
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Question 4

- 05** Outline the function and process of the fast component of the recovery process.
(4 marks)

<p>4 marks for 4 of:</p> <ul style="list-style-type: none"> A. EPOC explanation – volume of oxygen consumed in recovery above the resting rate B. The alactacid/alactic (debt/component) C. Re-saturation of myoglobin/haemoglobin with oxygen D. Re-synthesise ATP/PC levels E. Uses 2-4 litres of oxygen F. Completed in 2-3 minutes G. 50% PC stores replenished within 30 seconds/75% within 60 seconds 	<p>A – NOT repay oxygen debt A – NOT removes lactic acid</p> <p>Allow a few minutes</p>
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- 06** How can a performer reduce the effects of delayed onset of muscle soreness (DOMS)?
(3 marks)

<p>3 marks for 3 of:</p> <ul style="list-style-type: none"> A. Active warm-up/Active warm-down/cool down/stretching B. Avoid eccentric contractions early in session C. Gradually increase intensity of workload D. Massage E. Ice baths 	<p>D – NOT physio</p>
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Section B

Question 5

- 07** Explain the importance of cohesion to group productivity and outline possible strategies that can be used to reduce the negative impact of faulty processes on performance. (14 marks)

A good answer must address all parts of the question adequately, and should consider accurately the following topic areas:

<p>Importance of Cohesion</p> <ul style="list-style-type: none"> A. Cohesion – tendency of a group to stay together to achieve their <u>goal/task</u> B. Cohesion depends on group members/task/leader/team-based factors/equiv. C. Actual productivity = <u>potential productivity – losses due to faulty processes</u> D. <u>Co-ordination losses/faulty processes</u> eg poor teamwork/poor tactics E. <u>Motivational losses/faulty processes</u> eg loss of concentration/low self-confidence F. <u>Social loafing</u> – performer ‘hides’ within a team G. <u>Ringelmann effect</u> – Performance/cohesion may decrease as group size increases H. <u>Task cohesion</u> – ability of group to work together to achieve a common goal I. <u>Social cohesion</u> – interaction of players and their interpersonal relationships J. Task cohesion is more important than social cohesion/team can be successful with poor social cohesion K. Social cohesion can undermine performance/formation of cliques/not challenging poor performance for fear of upsetting others L. Social cohesion can aid performance by challenging the norm <p>Strategies</p> <ul style="list-style-type: none"> M. Practice/training to ensure all understand the tactics N. Give individuals specific responsibility/set goals O. Explain specific roles within the team P. Give feedback/video analysis of performance/reinforcement Q. Develop peer support/encourage each other/encourage open discussion/an effective leader R. Vary practice to maintain motivation/train in small groups S. Improve fitness levels T. Team bonding exercises/social outings U. Avoid social cliques V. Create a group identity eg team kit W. Develop self-confidence/self-efficacy/self-esteem/ credit use of attributions X. Maintain team stability if possible/limit change 	<p>Must link working together with goal/task B – have to name at least two out of these to get the mark B – refers to Carron's antecedents D and E – can be awarded if faulty processes are explained in correct context. F, G, H, I – terms must be explained</p> <p>Make individuals feel valid is too vague Reward is too vague</p> <p>Description of stages of group formation are not creditworthy – if answers are given in the context of applying strategies to improve cohesion, marks can be awarded</p>
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The following table should be used to determine the mark.

Band Range	Band descriptors
Level 4 12-14 mks 18/19/20 points – 12 marks 21+ points – 13 marks + QWC – max 14 marks	<ul style="list-style-type: none"> Addresses all areas of the question, demonstrates a wide range of depth and knowledge Expresses arguments clearly and concisely Few errors in spelling, punctuation and grammar, correct use of technical language
Level 3 8-11 mks 12/13 points – 8 marks 14/15 points – 9 marks 16/17 points – 10 marks + QWC – max 11 marks	<ul style="list-style-type: none"> Addresses most areas of the question, demonstrates a clear level of depth and knowledge Attempts to express arguments clearly and concisely Few errors in spelling, punctuation and grammar, correct use of technical language although sometimes inaccurately
Level 2 4-7 mks 6/7 points – 4 marks 8/9 points – 5 marks 10/11 points – 6 marks + QWC – max 7 marks	<ul style="list-style-type: none"> Addresses some aspects of the question but lacks sufficient depth and knowledge Limited attempt to develop any arguments or discussions, normally vague or irrelevant Errors in spelling, punctuation and grammar, limited use of technical language
Level 1 1-3 mks 1/2 points – 1 mark 3/4/5 points – 2 marks + QWC – max 3 marks	<ul style="list-style-type: none"> Addresses the question with limited success Major errors in spelling, punctuation and grammar, little use of technical language
Level 0 0 mks	<ul style="list-style-type: none"> Addresses no aspect of the question

Question 6

08 Explain the factors that contribute to a performer's level of 'achievement motivation'.
(3 marks)

3 marks for 3 of; A. Achievement motivation = desire to succeed – fear of failure B. Interactionist approach/depends on the personality <u>and</u> the situation C. (Personality) – either <u>Need to Achieve (nAch)</u> or <u>Need to Avoid Failure (nAf)</u> D. (Situation) – <u>probability of success</u> E. (Situation) – <u>incentive value of success</u>	
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- 11** Discuss the suggestion that 'home field advantage' will always improve the performance of the home team. (4 marks)

<p>4 marks for 4 of; (Sub max 2)</p> <p>Agree</p> <ul style="list-style-type: none"> A. Home support tends to improve performance/social facilitation effect/boost self-efficacy/lower levels of anxiety B. More matches won at home than away/during early rounds of competitions/Olympic & World medals by host nation C. Home teams tend to play more attacking styles/tactics/functional aggressive behaviour (accept reverse answer) D. Proximity effect/closeness of crowd has negative effect on visiting teams E. Larger crowd/hostile crowd has a negative effect on visiting teams F. <u>Away team</u> commit more fouls/can become anxious/over-aroused due to crowd or unfamiliar surroundings <p>Disagree</p> <ul style="list-style-type: none"> G. Increased pressure from the home crowd H. More important the game the greater the pressure/choke effect/championship choke I. Performers become more self-conscious at home causing over-arousal J. Players place more pressure on themselves at home matches due to expectations K. <u>Social inhibition</u> for the home team L. <u>Evaluation apprehension</u> for the home team 	<p>Answer has to indicate whether the discussion is referring to the home or away team</p> <p>Do NOT accept do not have to travel Feel safe too vague</p> <p>Discomfort too vague F – Social inhibition can be awarded if explained in the correct context and linked to away team G and J – Increased pressure too vague. Have to state where the pressure is from</p>
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Question 8

- 12** Identify **three** characteristics of a good leader **and** explain the difference between an emergent leader and a prescribed leader. (3 marks)

<p>3 marks for 3 of;</p> <ul style="list-style-type: none"> A. Characteristics (any 3 from) confident/organised/inspirational/good communicator/knowledgeable/visionary/good decision maker/ interpersonal skills/approachable/determined/empathy/charismatic/motivational/ equiv. B. Emergent leader – group approval/elected by the team C. Prescribed leader – appointed by external authority to lead the group 	<p>Take first 3 answers If talk about leadership styles, this is NOT a characteristic</p>
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- 13** Using **one** named psychological theory, outline how the negative attitude of an individual or of a team can be changed. (4 marks)

4 marks for 4 of; Accept first theory only/Theory must be named to be credited

- A. Persuasive communication
- B. Status of messenger/person delivering information/significant other
- C. Quality of message/new information
- D. Situation/time when message is given
- E. Individual's resistance to change
- F. Cognitive dissonance
- G. Attempts to create conflict in thoughts/beliefs/alter one part of Triadic Model/psychological discomfort
- H. Cognitive – give new information/education
- I. Affective – create new emotions/enjoyment/fun/feeling of safety or equiv.
- J. Behavioural – give success/reinforcement

Section C

Question 9

- 14** Discuss the suggestion that there has been a decline in sportsmanship since the late 19th Century **and** outline strategies that the sporting authorities have used in an attempt to maintain high standards of behaviour. (14 marks)

A good answer must address all parts of the question adequately, and should consider accurately the following topic areas:

<p>Agree</p> <ul style="list-style-type: none"> A. Explanation of <u>sportsmanship</u> – unwritten rules of etiquette/fairplay/spirit of the game/suitable example B. <u>19th century</u> sport run by middle/upper class/elite performers were amateur/amateur sport was dominant C. Based on concept of amateurism – playing for love of sport/ not paid D. Based on concept of athleticism – physical endeavour and moral integrity E. (During 20th century) professionalism increased/greater extrinsic rewards/more money involved/more commercialisation F. Greater pressure from media/national expectation/media encourages copying of poor role models G. Increase in win at all cost attitude/Lombardian ethic H. Caused an increase in <u>gamesmanship</u> – bending the rules I. (Increase in) doping/violent play/cheating/abusive language/match fixing/deviancy/prosecutions <p>Disagree</p> <ul style="list-style-type: none"> J. Sportsmanship promoted at events eg Olympics/Olympism/ Olympic Ideal K. Performers are role models and understand their responsibility L. Greater need to maintain image to retain sponsors/ commercial deals/image of sport M. (during 19th Century) corruption was part of sport/may not have declined just now more widely reported in the media <p>Strategies</p> <ul style="list-style-type: none"> N. Campaigns to promote sportsmanship/Respect/Fairplay Awards/Sporting ethics promoted within schools/clubs/ education O. Better officials/citing after game/better technology to help officials/fourth official P. Rules changed to promote fairplay Q. (On the field) – penalties/sin bins/bookings R. (Off the field) – fines/bans S. Punish the club – deduct points/matches behind closed doors T. Positive role models/name and shame bad role models U. <u>Codes of conduct</u> for players/spectators V. Drug testing W. Prosecute violent play 	<p>A – Do NOT accept ‘follow rules’</p> <p>C – Need to explain concept of amateurism D – Need to explain concept of athleticism</p> <p>F – Must relate to poor role models</p> <p>H – Accept suitable examples – NOT diving</p> <p>K – Not just role model on own – need effect of promoting sportsmanship</p> <p>Better technology needs impact</p> <p>Q and R refer to sanctions to the player</p>
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X. Encourage respect for officials/captains only allowed to question decisions	
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The following table should be used to determine the mark.

Band Range	Band descriptors
Level 4 11-14 mks	<ul style="list-style-type: none"> Addresses all areas of the question, demonstrates a wide range of depth and knowledge Expresses arguments clearly and concisely Few errors in spelling, punctuation and grammar, correct use of technical language
Level 3 7-10 mks	<ul style="list-style-type: none"> Addresses most areas of the question, demonstrates a clear level of depth and knowledge Attempts to express arguments clearly and concisely Few errors in spelling, punctuation and grammar, correct use of technical language although sometimes inaccurately
Level 2 4-6 mks	<ul style="list-style-type: none"> Addresses some aspects of the question but lacks sufficient depth and knowledge Limited attempt to develop any arguments or discussions, normally vague or irrelevant Errors in spelling, punctuation and grammar, limited use of technical language
Level 1 1-3 mks	<ul style="list-style-type: none"> Addresses the question with limited success Major errors in spelling, punctuation and grammar, little use of technical language
Level 0 0 mks	<ul style="list-style-type: none"> Addresses no aspect of the question

Question 10

- 15** How does the law and sports legislation help to ensure that performers are protected during sporting contests? *(3 marks)*

<p>3 marks for 3 of:</p> <ul style="list-style-type: none"> A. Protect against violent play B. Employment contracts with clubs/Sponsorship/commercial contracts/avoid burnout C. Ensure duty of care from officials/negligence of poor referees D. Safe playing environment/stadiums are suitable for purpose E. Protection from violent spectators/hooligans/terrorist threats F. Ensure opponents using doping methods are banned G. Equality legislation/racism act/sexism act/disability acts/age or weight categories/gender 	<p>Any links to private life and media intrusion is irrelevant</p> <p>Link to rules is irrelevant</p> <p>E – Focus not on method</p>
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Question 12

- 18** How does 'Sportscoach UK' fulfil its aim of improving the standard of coaching available to elite performers? (3 marks)

<p>3 marks for 3 of:</p> <ul style="list-style-type: none"> A. UK Coaching Framework/UK Coaching Certificate/UK Coaching Award B. UK Coaching Network/regional or local networks C. Work with other organisations (one must be named) Governing Bodies/Sport England/Sports Wales/Sport Northern Ireland/Sport Scotland/DCMS/UK Sport/Youth Sports Trust/National Skills Academy/Skills Active/Association for PE D. Coachwise/1st4Sport E. Sell coaching manuals/video/databases F. Provide workshops/seminars G. Coaching Edge magazine H. UK Centre for Coaching Excellence I. Funding research projects J. Provide interactive website with coaching advice K. John Lewis Partnership 	<p>J – NOT just website – need comment about content or purpose</p>
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- 19** Explain the advantages **and** the disadvantages of all sports, in all countries, testing for performance enhancing drugs. (4 marks)

<p>4 marks for 4 of (sub max of 2 marks)</p> <p>Advantages</p> <ul style="list-style-type: none"> A. Uphold the traditions of sport/sporting ethics/ cheats are caught/all competitors are equal/no country has an advantage/no performer has an advantage B. Standard list of banned substances/same testing procedures/similar punishments C. Random tests are more effective/ testing not limited by where the athlete is based D. Shared costs between all sports E. Performers not able to 'pick and choose' sports based on drug testing procedures/no basis for legal complaints of being unfairly treated <p>Disadvantages</p> <ul style="list-style-type: none"> F. Difficult to get all countries/sports to agree G. Expensive/limited number of testing facilities/not available in all countries H. Testing can produce incorrect results/inconsistent results/difficult to keep up with new drugs I. Difficult to agree which PED should be included in banned lists J. Professionals have the right to decide on their own development needs K. Money used for testing could be used for <u>education</u> about dangers of drug taking 	
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