



# **Mark Scheme (Results)**

Summer 2017

Pearson Edexcel GCE In Physical  
Education  
(6PE0) Paper 03

## **Edexcel and BTEC Qualifications**

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at [www.edexcel.com](http://www.edexcel.com) or [www.btec.co.uk](http://www.btec.co.uk). Alternatively, you can get in touch with us using the details on our contact us page at [www.edexcel.com/contactus](http://www.edexcel.com/contactus).

## **Pearson: helping people progress, everywhere**

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: [www.pearson.com/uk](http://www.pearson.com/uk)

Summer 2017

Publications Code 6PE03\_01\_1706\_MS\*

All the material in this publication is copyright

© Pearson Education Ltd 2017

## General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded.
- Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

Question Number	Answer	Additional Guidance	Mark
<b>1</b>	<ul style="list-style-type: none"> <li>• Glycogen or glucose are broken down</li> <li>• Glycolysis creates 2 (from glucose) or 3 (from glycogen) ATP</li> <li>• Anaerobic part occurs in sarcoplasm</li> <li>• Pyruvic acid/pyruvate is created</li> <li>• Pyruvic acid/ pyruvate enters the Krebs' cycle</li> <li>• Aerobic part takes place in mitochondria</li> <li>• Acetyl co A /Oxaloacetic acid/Citric acid created/used</li> <li>• Krebs' cycle creates 2ATP</li> <li>• Hydrogen passes to the Electron Transport Chain</li> <li>• ETC creates 32 or 34 ATP</li> <li>• Water as bi-product of ETC</li> <li>• Oxygen is used at the end of the ETC</li> <li>• Fat can be metabolised to produce energy</li> </ul>	An annotated diagram is acceptable only if it is explained.	<b>(6)</b>

Question Number	Answer		Additional Guidance	Mark
2	<p><b>Physiological process</b></p> <p>This is achieved in 2 phases/stages/components (fast &amp; slow) (1)</p> <p>Heart rate reduces but remains elevated above resting (1)</p> <p>Ventilation rates reduce but remain elevated above resting (1)</p> <p>Lactic acid needs to be removed. (1)</p> <p>Enzyme activity will begin to decrease (1)</p> <p>Metabolic rate/ATP re-synthesis remains elevated above resting level (1)</p>	<p><b>Outcome</b></p> <p>In the first few hours following exercise the body needs to return to homeostasis.</p> <p>Enables increased blood flow to the muscle (1)</p> <p>Temperature regulation/heat dissipation. (1)</p> <p>Oxygen levels will rapidly fall but remain above resting this allows oxymyoglobin levels to be restored. (1)</p> <p>Lactic acid needs to be removed via the process of oxidation. (1)</p> <p>Temperature regulation/heat dissipation. (1)</p> <p>Removal of CO<sub>2</sub> (1)</p> <p>Lactic acid will be oxidized/ begin to be converted to pyruvate, protein, glucose or glycogen and therefore utilised elsewhere in the body (1)</p> <p>Energy production decreases (1)</p> <p>Depleted phosphagen stores will be replenished back to resting levels (ATP and PC) (1)</p>	<p>Maximum of 3 marks for non-linked points. Standalone marks can be awarded to maximum 3 from either column.</p> <p>Marks should be credited in pairs after the initial 3 marks as linked responses, one from each column. Outcomes can be duplicated for different processes.</p>	<p><b>(6)</b></p>

	<p>The body needs to replenish glycogen stores (1)</p> <p>Oxygen consumption remains above resting levels (1)</p> <p>Consumption of water and electrolyte drinks (1)</p>	<p>This can be done by consuming carbohydrates or attempting to metabolise other stores. (1)</p> <p>Enables oxidation of lactic acid (1)</p> <p>Restore hydration and electrolyte levels (1)</p>		
--	--	--	--	--

Question Number	Answer	Additional Guidance	Mark
3	<ul style="list-style-type: none"> <li>Lactic acid can be used in the working muscle(s)</li> <li>Lactic acid can be removed by conversion to pyruvate/ pyruvic acid or oxidation (to carbon dioxide and water) via aerobic respiration.</li> <li>Lactic acid can be removed by converting it into protein/amino acids</li> <li>Lactic acid can be converted back to glycogen and stored in the liver</li> <li>Lactic acid can be converted into glucose</li> <li>Lactic acid be removed via the kidneys</li> <li>Lactic acid can be removed by non-working muscles</li> </ul>	Flushing out lactic acid will not be credited	(4)

<b>Question Number</b>	<b>Answer</b>	<b>Additional Guidance</b>	<b>Mark</b>
<b>4</b>	<ul style="list-style-type: none"><li>• Increase in stroke volume</li><li>• Increase in cardiac output when exercising</li><li>• Increased vascularisation of the heart</li><li>• Cardiac hypertrophy/ increased size of left ventricle</li><li>• Reduction in resting heart rate/ Bradycardia</li><li>• Reduction in heart rate</li><li>• Increased thickness of myocardium</li><li>• Increased strength of ventricular contraction</li><li>• Increased end diastolic volume/ left ventricle fills with more blood</li></ul>	Adaptations must clearly refer to the heart	<b>(5)</b>

Question Number	Answer	Additional Guidance	Mark
<b>5a</b>	<ul style="list-style-type: none"> <li>• Attribution theory attempts to categorise reasons we give for winning and losing</li> <li>• It refers to the perceived causes of events and behaviour</li> <li>• The first dimension is stability (stable vs unstable)</li> <li>• The second dimension locus of causality/locus of control (internal vs external)</li> <li>• Ability is stable and internal</li> <li>• Task difficulty is external and stable</li> <li>• Effort is unstable and internal</li> <li>• Luck is external and unstable</li> <li>• Internal factors are effort and ability</li> <li>• External factors are luck and task difficulty</li> <li>• Stable factors are relatively permanent and don't change over time</li> <li>• Locus of causality refers to how in control the performer is</li> </ul>	<p>No marks for just naming effort, luck, ability and task difficulty</p> <p>No marks awarded for saying Weiner theory</p> <p>No marks for examples in this part</p>	<b>(6)</b>

Question Number	Answer	Additional Guidance	Mark
<b>5b</b>	<ul style="list-style-type: none"> <li>• Attribute losing to external factors/factors out of your control: <ul style="list-style-type: none"> <li>• Luck was against you</li> <li>• Poor refereeing</li> <li>• Poor weather conditions</li> <li>• Wrong tactics used by coach</li> <li>• Spectator influence</li> <li>• Playing surface</li> </ul> </li> <li>• Attribute losing to task difficulty (stable/ external factors)</li> <li>• Stronger opposition</li> <li>• Attribute good play to internal/ stable factors</li> <li>• The coach praises their ability</li> <li>• Attribute good play to internal/ unstable factors</li> <li>• Good effort and determination</li> </ul>	Any other suitable examples can be credited.	<b>(5)</b>

Question Number	Answer	Additional Guidance	Mark
6	<p><b>Environmental factors</b> that bind players together e.g. age, club membership</p> <p><b>Personal factors</b>-belief in the group e.g. mixing young and old together</p> <p><b>Leadership factors</b> the influence of a leader e.g. coach or manager</p> <p><b>Team factors</b> establishing a group identity e.g. member roles, use of rewards, social bonding events</p> <p><b>Task cohesion</b> working to a common goal e.g. a team set their sights on winning a medal</p> <p><b>Social cohesion</b> the group get on well together e.g. good communication/ social events</p> <p><b>Size of the group</b> e.g. a larger group will find it harder to bond</p> <p><b>Cultural heritage</b> the group have a common identity e.g. The Haka</p>	<p>Naming the factor alone is not credited, candidates must explain what a factor is to gain one mark.</p> <p>The second mark is awarded for a correctly applied example.</p> <p>Candidates can use any other suitable examples to support points.</p> <p>N.B a maximum of two factors can be credited.</p> <p>Examples cannot be credited without being linked to a factor.</p>	(4)

Question Number	Answer	Mark
7	<p><b>Advantages:</b></p> <ul style="list-style-type: none"> <li>• Links shown in research between amount of state funding and medals won</li> <li>• For a small population it is easier to target this money effectively</li> <li>• e.g. East Germany, Australia puts all resources into one place</li> <li>• Targeting limited funds to elite performers has potential for global prestige/uniting the nation</li> <li>• Equal footing for all socio economic groups</li> <li>• Allows athletes to train full time</li> </ul> <p><b>Disadvantages:</b></p> <ul style="list-style-type: none"> <li>• Money may be better spent at the base of the pyramid</li> <li>• Makes sport a political tool so athletes may be forced to compete and travel to particular countries</li> <li>• Athletes may not be allowed to compete in certain countries that government has an issue with</li> <li>• USA is an example of a very successful team who do not use state funding</li> <li>• Focus on elite can limit mass participation potential – can impact on health of the nation</li> <li>• Gap can widen between amateur and elite</li> <li>• Athletes may have to relocate</li> <li>• Not all sports are treated equally</li> </ul>	<p><b>Max 2 marks for advantages, Max 2 marks for disadvantages</b></p> <p><b>(4)</b></p>

Question Number	Answer	Mark
8	<ul style="list-style-type: none"> <li>• At the foundation stage modified games e.g Little League</li> <li>• High school and college/university system</li> <li>• Mirrors the professional system. E.g. TV coverage/spectators come to watch games.</li> <li>• There is support for High school and college teams from the local community. E.g. sponsors and spectators fund the activity.</li> <li>• Athletes are awarded scholarship programmes to college which is one route to professionalism.</li> <li>• There is a draft system where the last team get first choice of the new players.</li> <li>• High schools and colleges/universities have elite facilities</li> <li>• High schools and colleges/universities have top coaches.</li> <li>• NCAA provides an opportunity for scouting/ high level competition/ an overall organisation.</li> <li>• Decentralised approach</li> </ul>	(5)

Question Number	Answer	Additional Guidance	Mark
9	<ul style="list-style-type: none"> <li>• The administration of the World class Performance Programme</li> <li>• Overseeing UK Sports bodies to ensure the smooth running of elite sport.</li> <li>• The liaison with UKAD to ensure thorough and effective Anti- Doping policies.</li> <li>• Funding allocated to NGB's/Sports to support an identified group of elite athletes.</li> <li>• Identification of talent in the UK in an identified group of sports.</li> <li>• Running of the UKSI network.</li> <li>• The coordination of bids for international events.</li> <li>• Elite coach support network.</li> <li>• Training opportunities for officials.</li> <li>• Liaise with World and European Governing Bodies.</li> <li>• Maximising medal chances at international events/ Olympic/ Paralympic.</li> </ul>	<p>No mark for UK Sports overseeing sport in the UK.</p> <p>No mark for general statements about funding without reference to NGBs.</p>	<b>(5)</b>

Question Number		Indicative Content
<b>*10 QWC</b>		<p><b>Examples of links can be added at STM</b></p> <p>Theories</p> <ul style="list-style-type: none"> <li>• Evaluation apprehension</li> <li>• Athlete may have the fear of being judged and would need strategies to combat this</li> <li>• Cue utilisation theory as arousal increases attention narrows</li> <li>• Zajonc's drive theory suggests learned behaviours are dominant responses</li> <li>• The dominant response can be over learnt e.g. if expert has correct dominant response</li> <li>• Social facilitation others can have an influence on performance</li> <li>• Inverted U theory suggests there is an optimum point of performance</li> <li>• Catastrophe model can lead to a sudden decline in performance if anxiety is high</li> <li>• Zone of optimal performance</li> </ul> <p>Strategies</p> <ul style="list-style-type: none"> <li>• mental rehearsal,</li> <li>• imagery,</li> <li>• coping skills,</li> <li>• relaxation techniques,</li> <li>• somatic and cognitive techniques,</li> <li>• pre performance routines,</li> <li>• coping with crowds,</li> <li>• selective attention</li> </ul>
Level	Mark	Descriptor
<b>Level</b>	<b>0</b>	No rewardable content
<b>1</b>	<b>1 – 5</b>	<ul style="list-style-type: none"> <li>• A limited explanation that includes descriptive comment and/or lists, with minimal or no detail.</li> <li>• Subject specific terminology is not used and/or inappropriately used</li> <li>• The response is mostly appropriate; though include many factual inaccuracies and irrelevancies.</li> <li>• The response is poorly structured with frequent errors in spelling, punctuation and grammar.</li> </ul> <p>Only one theory or lacking application</p>

<b>2</b>	<b>6 – 10</b>	<ul style="list-style-type: none"> <li>• A basic explanation that includes mostly descriptive comment, and contain some detail.</li> <li>• Subject specific terminology is sometimes used, though there may be some inaccuracies in its application.</li> <li>• Responses are appropriate; though include some factual inaccuracies and/or irrelevancies.</li> <li>• The response has a basic structure with frequent errors in spelling, punctuation and grammar.</li> </ul> <p>More than one theory and some basic explanation about how to use it – e.g. strategies to use/ practical application</p>
<b>3</b>	<b>11 – 15</b>	<ul style="list-style-type: none"> <li>• A good explanation that includes some detail.</li> <li>• Subject specific terminology is consistently used, though there may be some inaccuracies in its application.</li> <li>• Responses are relevant and appropriate.</li> <li>• The response has a sound structure with some errors in spelling, punctuation and grammar.</li> </ul> <p>Several theories which have specific strategies that an athlete can use in training or competition to reduce anxiety.</p>
<b>4</b>	<b>16 - 20</b>	<ul style="list-style-type: none"> <li>• A comprehensive explanation that is coherent and includes a full detail.</li> <li>• Subject specific terminology is used with minimal error in its application.</li> <li>• Responses are insightful, realistic and current.</li> <li>• The response has clear and effective structure with minimal error in spelling, punctuation and grammar.</li> </ul> <p>Detailed explanations of several theories, strategies to use and sporting examples to support. Debates the theories and suggests some contradict and important to individuals and sports</p>

Question number	Indicative content
<p><b>*11</b> <b>QWC</b></p>	<p><b>Hot Environment Hydration planning Heat acclimatisation</b>  Training in a climate chamber  Training camps at an appropriate venue Preparation approximately between 10-14 days Cold Environment  Training with ice vests  Training with appropriate clothing e.g. base layers Training camps at an appropriate venue</p> <p><b>Humid Environment</b>  Hydration planning  Training in humid conditions  Training camps at an appropriate venue</p> <p><b>Hot &amp; Humid Environment</b>  Prioritising heat training before humidity Training camps at an appropriate venue</p> <p><b>Hypoxic Environment (altitude)</b>  Live high train high (LHTH) Live low train high (LLTH) Live high train low (LHTL)  Training/sleeping in a hypoxic chamber Sleeping in an altitude tent  Training camps at an appropriate venue  Full adaptations required should take approximately 3 weeks</p> <p><b>Windy Environment</b>  Streamlining  Selection of appropriate kit e.g. helmet Training in a wind tunnel to simulate conditions Training camps at an appropriate venue</p> <p><b>Playing Environment</b>  Crowd can influence performance e.g. hostile environment  Playing surface e.g. tennis player moving from grass to clay  Kit selection e.g. studs for different surfaces  Indoor/ outdoor (covered stadium)</p> <p>All other suitable examples</p>

Level	Mark	Descriptor
<b>Level</b>	<b>0</b>	No rewardable content
<b>1</b>	<b>1 – 5</b>	<ul style="list-style-type: none"> <li>• A limited explanation that includes descriptive comment and/or lists, with minimal or no detail.</li> <li>• Subject specific terminology is not used and/or inappropriately used</li> <li>• The response is mostly appropriate; though include many factual inaccuracies and irrelevancies.</li> <li>• The response is poorly structured with frequent errors in spelling, punctuation and grammar.</li> </ul> <p>Bullet pointed answers, perhaps only one environmental factor. May focus on performance and not preparation.</p>
<b>2</b>	<b>6 – 10</b>	<ul style="list-style-type: none"> <li>• A basic explanation that includes mostly descriptive comment, and contain some detail.</li> <li>• Subject specific terminology is sometimes used, though there may be some inaccuracies in its application.</li> <li>• Responses are appropriate; though include some factual inaccuracies and/or irrelevancies.</li> <li>• The response has a basic structure with frequent errors in spelling, punctuation and grammar.</li> </ul> <p>Multiple factors and basic details though some inaccuracy. Possibly goes into some indicative content but not the scientific info about how to prepare. Examples may be events but not specific detail on how to prepare. Essay is focussed on prep though.</p>
<b>3</b>	<b>11 – 15</b>	<ul style="list-style-type: none"> <li>• A good explanation that includes some detail.</li> <li>• Subject specific terminology is consistently used, though there may be some inaccuracies in its application.</li> <li>• Responses are relevant and appropriate.</li> <li>• The response has a sound structure with some errors in spelling, punctuation and grammar.</li> </ul> <p>Multiple factors and scientific detail. Essay focussed on prep. Limited consideration of strengths and limitations of each factor.</p>
<b>4</b>	<b>16 – 20</b>	<ul style="list-style-type: none"> <li>• A comprehensive explanation that is coherent and includes a full detail.</li> <li>• Subject specific terminology is used with minimal error in its application.</li> <li>• Responses are insightful, realistic and current.</li> <li>• The response has clear and effective structure with minimal error in spelling, punctuation and grammar.</li> </ul> <p>Thorough in terms of scientific detail and factors, evidence of strengths and limitations of each factor. Factors should be drawn from the breadth of the specification. Focussed on preparation and not performance. A well planned and structured response. Many elements of indicative content covered.</p>