



Pearson
Edexcel

Mark Scheme (Results)

Summer 2022

Pearson Edexcel GCSE
In Physical Education Short Course (3PE0)
Paper 01 Theory

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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	Mark
	A01 – 1 mark	
Q01 (a)	<p>The only correct answer is D – Cranium</p> <p>Incorrect options:</p> <p>A – <i>Carpal - found in the wrist</i></p> <p>B – <i>Cervical - a region of the vertebral column</i></p> <p>C – <i>Clavicle joins to the sternum and scapula</i></p>	(1)

Question Number	Answer	Mark
	A01 – 1 mark	
Q01 (b)	<p>The only correct answer is C – Tendons join muscle to bone</p> <p>Incorrect options:</p> <p>A – <i>Join bone to bone – this is the role of the ligaments</i></p> <p>B – <i>Join ligaments to bone – the ligaments join directly to the bones</i></p> <p>D – <i>Join muscle to muscle – muscles attach to bone rather than another muscle</i></p>	(1)

Question Number	Answer	Mark
	A02 – 1 mark	
Q01 (c)	<p>The only correct answer is B - Gluteus maximus</p> <p>Incorrect options:</p> <p>A – <i>Biceps causes movement at the elbow</i></p> <p>C – <i>Latissimus dorsi causes movement at the shoulder</i></p> <p>D – <i>Quadriceps causes movement at the knee</i></p>	(1)

Question Number	Answer	Mark
	A01 – 1 mark	
Q01 (d)	<p>The only correct answer is C –They produce a large amount of force</p> <p>Incorrect options: <i>All of the other options are characteristics of type I muscle fibres</i></p>	(1)

Question Number	Answer	Mark
	A03 – 1 mark	
Q01 (e)	<p>The only correct answer is A – Blood is at high pressure as it leaves the heart via the aorta</p> <p>Incorrect options: B – <i>Average blood pressure in arterioles</i> C – <i>Average blood pressure in capillaries</i> D – <i>Average blood pressure in veins</i></p>	(1)

Question Number	Answer	Mark
	A01 – 1 mark	
Q01 (f)	<p>The only correct answer is A – Cardiac output</p> <p>Incorrect options: B – <i>Stroke volume – amount of blood leaving the heart per beat</i> C – <i>Tidal volume – amount of air breathed in and out during normal breathing</i> D – <i>Vital capacity – maximum volume of air expired following maximum inspiration</i></p>	(1)

Question Number	Answer	Mark
A03	1 mark	
Q01 (g)	<p>The only correct answer is C - O₂ leaving the alveolus and CO₂ entering</p> <p>Incorrect options:</p> <p>A – Gases are exchanged so will not both be travelling in the same direction</p> <p>B – Gases are exchanged so will not both be travelling in the same direction</p> <p>D – O₂ should be entering the blood stream and CO₂ should be leaving the blood stream to be breathed out</p>	(1)

Question number	Answer	Mark									
AO1	4 marks										
Q02 (a&b)	<p>1 mark for each correct identification.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #cccccc;">Labelled muscle</th> <th>(a) Name of muscle</th> <th>(b) Function of muscle</th> </tr> </thead> <tbody> <tr> <td style="background-color: #cccccc;"></td> <td>Deltoid (1)</td> <td>Abduct the shoulder (1) (Accept any specific joint movement at <u>shoulder</u>, e.g. flex/rotates/ extends circumduction/ adduction)</td> </tr> <tr> <td style="background-color: #cccccc;"></td> <td>External obliques (1)</td> <td>Flex the <u>truck/vertebrae</u> (1)</td> </tr> </tbody> </table>	Labelled muscle	(a) Name of muscle	(b) Function of muscle		Deltoid (1)	Abduct the shoulder (1) (Accept any specific joint movement at <u>shoulder</u> , e.g. flex/rotates/ extends circumduction/ adduction)		External obliques (1)	Flex the <u>truck/vertebrae</u> (1)	(4)
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	External obliques (1)	Flex the <u>truck/vertebrae</u> (1)									

Question number	Answer	Mark
	AO1 – 1 mark	
Q02 (c)	<p>For example:</p> <ul style="list-style-type: none"> • Conscious control (1) <p>Accept other appropriate responses</p>	(1)

Question number	Answer	Mark
	AO1 – 1 mark; AO2 - 1 mark; AO3 - 1 mark	
Q02 (d)	<p>For example:</p> <ul style="list-style-type: none"> • Involuntary muscles do not require conscious control (1) which means all the players attention can be on the game (1) e.g., the involuntary muscles in blood/oxygen to circulate (1). • Involuntary muscles work automatically without specific instruction from the player (1) e.g., the involuntary muscles in the respiratory system (1) allow increased air flow/flow of oxygen into the lungs (1) <p>Accept other appropriate responses</p> <p>One mark for reason why involuntary muscles are important (AO1) One mark for example (AO2) One mark for linked expansion to justify why this is important to the performer (AO3)</p>	(3)

Question number	Answer AO1 – 1 mark; AO2 – 1 mark	Mark
Q03 (a)	<p>For example:</p> <ul style="list-style-type: none"> • Ligaments stabilise the joint (1) to allow dislocation when dodging (1) • Ligaments join bone to bone/connect bones (1) reducing the risk of dislocation/injury during play (1) <p>Accept other appropriate responses</p> <p>One mark for role (AO1) One mark for link of need for this role in sport (AO2)</p>	(2)

Question Number	Answer AO2 – 1 mark; AO3 – 1 mark	Mark
Q03 (b)	<p>For example:</p> <p>Games play requires lots of medium to high intensity work/lots of sprints over an extended period of time (1) type IIa, whilst not as powerful as type IIx will provide enough power to sprint/have sufficient endurance properties to repeat sprints throughout the game (1)</p> <p>Accept other appropriate responses</p> <p>One mark for demand/intensity of sport (AO2) One mark for justification why type IIa meet this demand (AO3)</p>	(2)

Question number	Answer AO2 – 3 marks; AO3 – 1 mark	Mark
Q03 (c)	<p>For example:</p> <ul style="list-style-type: none"> • Work rate increases during exercise (1) therefore the performer will get hot (1) so the performer's CV system will redistribute blood flow to remove excess heat (1) to allow them to maintain quality of performance /to prevent them overheating (1) <p>Accept other appropriate responses</p> <p>Up to three marks for applying knowledge to show the need for temperature regulation during exercise (AO2) One mark for justifying why this is an issue to the performer (AO3)</p>	(4)

Question number	Answer AO2 – 1 mark	Mark
Q03 (di)	<p>For example:</p> <ul style="list-style-type: none"> • Jogging/walking back to position (1) • When they are recovering during a break in play (1) <p>Accept other appropriate responses</p>	(1)

Question number	Answer AO2 – 1 mark	Mark
Q03 (dii)	<p>For example:</p> <ul style="list-style-type: none"> • Sprinting to a loose ball (1) • Jumping to catch/head a ball (1) • Serving in tennis (1) • GK diving to make a save (1) <p>Accept other appropriate responses</p>	(1)

Question number	Answer AO1 – 1 mark	Mark
Q03 (e)	<p>1 mark for correct identification.</p> <ul style="list-style-type: none"> • Carbon dioxide/CO₂ (1) • Water/H₂O (1) 	(1)

Question number	Answer AO3 – 2 marks	Mark
Q04 (a)	<p>1 mark for each correct identification. Mark to a maximum of 2 marks.</p> <p>Plane</p> <ul style="list-style-type: none"> • Frontal <p>Axis</p> <ul style="list-style-type: none"> • Sagittal <p>Accept other appropriate responses</p>	(2)

Question number	Answer AO1 – 2 marks	Mark				
Q04 (b)	<p>1 mark for each correct identification. Mark to a maximum of 2 marks.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%; padding: 5px;">Agonist</td> <td style="padding: 5px;">Triceps/Triceps brachii (1)</td> </tr> <tr> <td style="padding: 5px;">Antagonist</td> <td style="padding: 5px;">Biceps/Biceps brachii (1)</td> </tr> </table>	Agonist	Triceps/Triceps brachii (1)	Antagonist	Biceps/Biceps brachii (1)	(2)
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Antagonist	Biceps/Biceps brachii (1)					

Question number	Answer AO1 – 1 mark	Mark
Q04 (c)	<p>1 mark for correct identification.</p> <ul style="list-style-type: none"> • Ball and socket (1) 	(1)

Question number	Answer AO3 – 1 mark	Mark
Q04 (d)	<p>1 mark for correct identification.</p> <ul style="list-style-type: none"> • Abduction (1) 	(1)

Question number	Answer AO1 – 1 mark; AO2 - 1 mark	Mark
Q04 (e)	<p>For example:</p> <ul style="list-style-type: none"> • The short bones are very strong (1) therefore they allow the gymnast to place weight on the hands during the movement (1) • They are needed to take the gymnast's body weight/they are weight bearing (1) so the gymnast can go upside down/take his weight on his hands/wrists during the movement (1) <p>Accept other appropriate responses</p> <p>One mark for reason (AO1) One mark for linking function to importance to gymnast (AO2)</p>	(2)

Question number	Answer AO1 – 3 marks	Mark
Q04 (f)	<p>1 mark for each descriptive point.</p> <p>For example:</p> <p>Three from the following:</p> <ul style="list-style-type: none"> • These joints allow circumduction (1) • Which is a circular/conical shape movement (1) • Combining flexion <u>and</u> extension (1) • and adduction <u>and</u> abduction (1) <p>Accept other appropriate responses</p>	(3)

Question number	Answer AO1 – 2 marks; AO2 – 2 marks; AO3 - 2 marks	Mark
Q05	<p>For example:</p> <p>Knee</p> <ul style="list-style-type: none"> • Extension has occurred at the right knee (1) due to the contraction of the quadriceps (1) allowable due to the relaxation of the hamstrings (1) <p>Ankle</p> <ul style="list-style-type: none"> • Plantar-flexion has occurred at the right ankle (1) due to the contraction of the gastrocnemius (1) allowable due to the relaxation of the tibialis anterior (1) <p>Accept other appropriate responses</p> <p>One mark for analysis of joint action in image (AO3) One mark for linking joint action to antagonistic muscle action required (AO2) One mark for reason for movement (AO1)</p>	(6)

Question number	Answer AO1 – 1 mark	Mark
Q06 (a)	<p>1 mark for correct identification.</p> <ul style="list-style-type: none"> • Emotional (1) <p>Accept phonetic spelling</p>	(1)

Question number	Answer AO2 – 1 mark; AO3 – 1 mark	Mark
Q06 (b)	<p>For example:</p> <ul style="list-style-type: none"> • Reduces risk of sedentary lifestyle/makes you active/exercise (1) reducing risk of obesity/high BP/equiv (1) • Provides motivation (1) to maintain activity (1) • Motivating (1) to see health improving (1) • Will focus on the individual's weaknesses/needs/issues (1) which will improve if they exercise regularly (1) <p>Accept other appropriate responses</p> <p>One mark for relevant reason (AO2) One mark for justification (AO3)</p>	(2)

Question number	Answer AO1 – 1 mark; AO2 – 1 mark; AO3 – 1 mark	Mark
Q06 (ci)	<p>For example:</p> <ul style="list-style-type: none"> • Protein for growth/repair/increase muscle size (1), if power athletes consume protein within 1 hour/as soon as possible (after a workout) (1) they can repair the micro-tears in the muscle (caused by the workout) (1) • Protein for growth/repair (1) so power athletes should consume protein throughout the day/every 3 – 5 hours (1) so protein is available while the body is resting for adaptations (1) <p>Accept other appropriate responses</p> <p>One mark for role of protein (AO1) One mark for timing for power athlete (AO2) One mark for reasoning why timing is important (AO3)</p>	(3)

Question number	Answer	Mark
	AO1 – 1 mark; AO2 – 1 mark	
Q06 (cii)	<p>For example:</p> <ul style="list-style-type: none"> • Carbohydrate load (1) so they have increased energy/glycogen stores for the race (1) <p>Accept other appropriate responses</p> <p>One mark for method (AO1) One mark for how this prolongs marathon runner's energy stores (AO2)</p>	(2)

Question number	Answer	Mark
	AO1 – 1 mark; AO2 – 1 mark	
Q07 (a)	<p>For example:</p> <ul style="list-style-type: none"> • Weight management/healthy body weight (1) with an imbalance of carbohydrates/fats/calories could lose too much weight/gain too much weight (1) • Reduced risk of deficiency disease/poor immune system/illness (1) if insufficient vitamins/minerals consumed (1) <p>Accept other appropriate responses</p> <p>One mark for reason (AO1) One mark for expansion how poor diet causes given 'reason' (AO2)</p>	(2)

Question number	Answer AO1 – 1 mark; AO2 – 1 mark	Mark
Q07 (b)	<p>For example:</p> <ul style="list-style-type: none"> • Maintains bowel health (1) by aiding bowel movement/reducing risk of constipation (1) • Regulates cholesterol/reduces BP/CHD/stroke (1) by reducing build up of cholesterol in blood vessels (1) • Helps control blood sugar level (1) so reduces risk of type 2 diabetes (1) • Makes you feel fuller (1) therefore less likely to overeat/gain excess weight (1) <p>Accept other appropriate responses</p> <p>One mark for reason (AO1) One mark for expansion lack of fibre causes given 'reason' (AO2)</p>	(2)

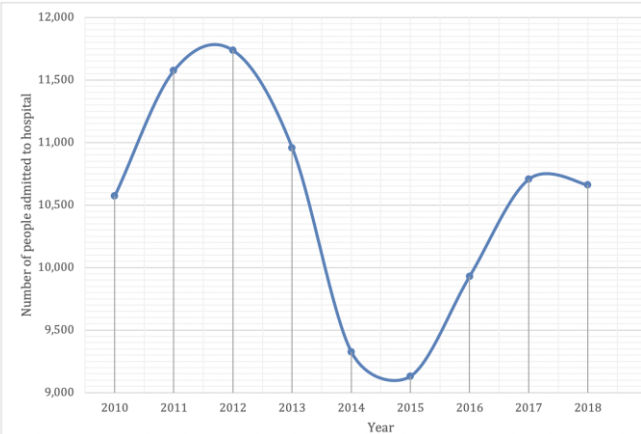
Question number	Answer AO1 – 1 mark; AO2 – 1 mark	Mark
Q07 (c)	<p>For example:</p> <ul style="list-style-type: none"> • Maintain hydration/prevent dehydration/replace fluids (1) due to sweating during exercise (1) • Prevent dehydration (1) and therefore dizziness (1) <p>Accept other appropriate responses</p> <p>One mark for reason (AO1) One mark for expansion of why need to maintain hydration or impact of dehydration (AO2)</p>	(2)

Question number	Answer	Mark
	AO1 – 1 mark; AO2 – 1 mark	
Q08 (a)	<p>For example:</p> <ul style="list-style-type: none"> • Because you may train/exercise too much (1) increasing the risk of an (overuse) injury (1) <p>Accept other appropriate responses</p> <p>1 mark for reason (AO1) 1 mark for linked expansion (AO2)</p>	(2)

Question number	Answer	Mark
	AO1 – 1 mark; AO2 – 1 mark	
Q08 (b)	<p>For example:</p> <ul style="list-style-type: none"> • You may develop friendships (1) with the people you play/train with (1) • It can improve your teamwork skills (1) as you work together to achieve a common team goal (1) <p>Accept other appropriate responses</p> <p>One mark for reason (AO1) One mark for reasoning why this promotes social health (AO2)</p>	(2)

Question number	Answer	Mark
	AO1 – 1 mark; AO2 – 1 mark	
Q08 (c)	<p>For example:</p> <ul style="list-style-type: none"> • To recover/reduce fatigue (1) so can be productive at work/improve concentration (1) • If you spend too much time working/overwork (1) can increase stress/depression/irritability (1) <p>Accept other appropriate responses</p> <p>One mark for reason (AO1) One mark for expansion why this reason is important (AO2)</p>	(2)

Question number	Answer	Mark
Q08 (d)	<p>For example:</p> <ul style="list-style-type: none"> • Contains nicotine/carcinogens (1) resulting in lung cancer (1) • Carbon monoxide/tar found in cigarettes (1) can cause lung cancer/emphysema/stroke (1) <p>Accept other appropriate responses</p> <p>One mark for reason (AO1) One mark for expansion why this is a negative lifestyle choice (AO2)</p>	(2)

Question number	Answer	Mark																				
Q08 (e)	<p>Figure 8 shows the number of people admitted to hospital from 2009-2018 due to obesity.</p>  <table border="1" data-bbox="432 1205 1075 1637"> <caption>Data for Figure 8</caption> <thead> <tr> <th>Year</th> <th>Number of people admitted to hospital</th> </tr> </thead> <tbody> <tr><td>2010</td><td>10,550</td></tr> <tr><td>2011</td><td>11,550</td></tr> <tr><td>2012</td><td>11,750</td></tr> <tr><td>2013</td><td>10,950</td></tr> <tr><td>2014</td><td>9,300</td></tr> <tr><td>2015</td><td>9,100</td></tr> <tr><td>2016</td><td>9,950</td></tr> <tr><td>2017</td><td>10,700</td></tr> <tr><td>2018</td><td>10,650</td></tr> </tbody> </table> <p>One mark for correct identification.</p> <ul style="list-style-type: none"> • Downwards trend (1) <p>Accept other appropriate responses</p>	Year	Number of people admitted to hospital	2010	10,550	2011	11,550	2012	11,750	2013	10,950	2014	9,300	2015	9,100	2016	9,950	2017	10,700	2018	10,650	(1)
Year	Number of people admitted to hospital																					
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Question number	Answer AO3 – 1 mark	Mark
Q08 (f)	<p>One mark for correct identification.</p> <ul style="list-style-type: none"> • 2010 (1) • Between 2010 and 2011 (1) <p>Accept other appropriate responses</p>	(1)

Question number	Answer AO2 – 1 mark; AO3 – 1 mark	Mark
Q09 (a)	<p>For example:</p> <ul style="list-style-type: none"> • Because of their <u>role/position</u> (1) e.g., rugby forwards will be stronger so weigh more/backs lighter so more nimble to avoid tackles (1) • In rugby forwards need greater muscle girth (1) so will have a higher optimum weight (1) • In netball/football the GK may be taller than other players/have longer bones (1) so will have a higher optimum weight (1) <p>Accept other appropriate responses</p> <p>One mark for applied reason (AO2) One mark for reasoning why this means they have a different optimum weight (AO3)</p>	(2)

Question Number	Answer	Mark
Q09 (b)	<p>For example:</p> <ul style="list-style-type: none"> The players in the image are different sexes/gender (1) the women will tend to have smaller bone structure/frames/skeleton/will likely be shorter therefore a lower optimum weight (1) <p>Accept other appropriate responses</p> <p>One mark for identification of reason (AO2) One mark for linked reasoning why this means they have a different optimum weight (AO3)</p>	(2)

Question Number	Indicative content (A01 – 3 marks; A02 - 3 marks for application; A03 - 3 marks for evaluation)	Mark
Q10	<p>Reward acceptable answers. Responses may include, but are not limited to, the following:</p> <p>Knowledge and understanding of the short-term effects (A01).</p> <ul style="list-style-type: none"> • Lactate accumulates when there is insufficient oxygen (AO1) • Lactate builds up in the muscle (AO1) • An increased depth of breathing increases the amount of air entering the body/CO₂ leaving the body (AO1) • An increased heart rate will speed up/increase blood flow (AO1) <p>Application of knowledge, linking the short-term effect to participation in handball (A02).</p> <ul style="list-style-type: none"> • Lactate accumulates when there is insufficient oxygen (AO1) this will happen when the player works anaerobically/sprints during the game (AO2) • An increased depth of breathing increases the amount of air entering the body (AO1) this means the player has more oxygen coming into the body so they can play for the 60-minute game (AO2) • An increased heart rate will speed up blood flow (AO1) which means oxygen/nutrients can be transported at a faster rate to the player's working muscles (AO2) <p>Evaluation of topic – making reasoned judgments about the importance of the short-term effect to the handball player (A03).</p> <ul style="list-style-type: none"> • Lactate accumulates when there is insufficient oxygen (AO1) this will happen when the player works anaerobically/sprints during the game (AO2) but it needs removing to allow the player to continue to make fast runs/throw hard shots/otherwise their muscles will fatigue (AO3) • An increased depth of breathing increases the amount of air entering the body (AO1) this means the player has more oxygen to work at a moderate intensity throughout the game (AO2), without this additional oxygen there would not be enough oxygen for recovery/to continue to work aerobically (AO3) • An increased heart rate will speed up blood flow around the body (AO1) which means nutrients can be transported at a faster rate to the player's working muscles for energy (AO2) without this increased access to energy the player will need to work at a lower intensity and therefore not perform as well during the game. • Although lactate accumulation can lead to muscle fatigue it does allow the player to work at a higher level during the game to make essential plays, the other two short-term effects help the player prevent lactate accumulation making sure the player can play well throughout the duration of the game (AO3) <p>Students who only show achievement against A01 will not be able to gain marks beyond level 1.</p>	

Level	Mark	Descriptor
	0	No rewardable material
1	1-3	<ul style="list-style-type: none"> • Demonstrates isolated elements of knowledge and understanding, with limited technical language used (AO1). • Limited attempt to apply knowledge to question context (AO2). • Generic assertions may be presented (AO3 - evaluation).
2	4-6	<ul style="list-style-type: none"> • Demonstrates mostly accurate knowledge and understanding, including appropriate use of technical language in places (AO1). • Applied knowledge to question context (AO2). • Attempts at drawing conclusion, with some support from relevant evidence (AO3 - evaluation).
3	7-9	<ul style="list-style-type: none"> • Demonstrates accurate knowledge and understanding throughout, including appropriate use of technical language (AO1). • Applied detailed knowledge to question context throughout (AO2). • Reaches a valid and well-reasoned conclusion supported by relevant evidence (AO3 - evaluation).