Pearson Edexcel

Mark Scheme (Results)

November 2020

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 AO1 – 1 mark	Mark
1 (a)	**The only correct answer is B – Metacarpal** ***A*** *is not correct because Carpals form the wrist* ***C*** *is not correct because Phalanges form the fingers* ***D*** *is not correct because Tarsal found in the foot*	**(1)**

Question Number	Answer AO1 – 1 mark	Mark
1 (b)	**The only correct answer is D – (Left) ventricle** ***A*** *is not correct because this is the vena cava* ***B*** *is not correct because this is the left atrium* ***C*** *is not correct because this is the tricuspid valve*	**(1)**

Question Number	Answer AO2 – 1 mark	Mark
1 (c)	**The only correct answer is D – Third class lever system** ***A, B and C*** *are not correct because* this is a third class lever as the effort is between the fulcrum and the resistance or load	**(1)**

Question Number	Answer AO3 – 1 mark	Mark
1 (d)	**The only correct answer is C – 95 bpm** ***A*** *is not correct because 65 bpm is lowest heart rate therefore at rest* ***B*** *is not correct because 72 bpm is slight elevation due to anticipatory rise, therefore just before exercise* ***D*** *is not correct because 180 bpm is highest heart rate therefore must be during exercise*	**(1)**

Question Number	Answer AO3 – 1 mark	Mark
1 (e)	**The only correct answer is A – 4%** ***B*** *is not correct because % oxygen exhaled* ***C*** *is not correct because % oxygen inhaled* ***D*** *is not correct because % nitrogen*	**(1)**

Question Number	Answer AO3 – 1 mark	Mark
1 (f)	**The only correct answer is A – Healthy weight** ***B*** *is not correct because obese would need to be over 90kg for her height* ***C*** *is not correct because overweight would need to be over 70kg for her height* ***D*** *is not correct because underweight would need to be under 60kg for her height*	**(1)**

Question Number	Answer AO2 – 1 mark	Mark
1 (g)	**The only correct answer is A – Carbohydrates** ***B*** *is not correct because minerals are micronutrient therefore eaten in small quantities* ***C*** *is not correct because proteins should be around 25% compared to carbohydrates 40%* ***D*** *is not correct because vitamins are micronutrient therefore eaten in small quantities*	**(1)**

Question Number	Answer AO1 – 2 marks; AO2 – 2 marks	Mark
2 (a&b)		**(4)**

Vital organ	**(a) Bone protecting vital organ**	**(b) Classification of the bone**
Brain	Cranium (1)	Flat (1)
Spine	Vertebral column (1)	Irregular (1)

Question Number	Answer AO1 – 2 marks	Mark
2 (c) (i)	1 mark for each correct part of the answer • Calcium (1) • Strength/density (1) Accept other appropriate responses	**(2)**

Question Number	Answer AO1 – 1 mark	Mark
2 (c) (ii)	1 mark for correct answer • Platelets (1) Accept phonetic spelling	**(1)**

Question Number	Answer AO1 – 1 mark	Mark
2 (c) (iii)	1 mark for correct answer • White (1) Accept other appropriate responses Accept phonetic spelling	**(1)**

<table>
<tr><th>Question Number</th><th>Answer
AO1 – 3 marks</th><th>Mark</th></tr>
<tr><td>3 (a&b)</td><td>1 mark for each correct answer

<table>
<tr><th>Bone</th><th>(a) Range of movement possible at each type of joint</th><th>(b) Example of type of joint in the body</th></tr>
<tr><td>Pivot</td><td>Rotation (1)</td><td>Atlas and axis (1)</td></tr>
<tr><td>Hinge</td><td>Flexion to extension (1)</td><td>Knee/elbow (1)</td></tr>
<tr><td>Ball and socket</td><td>Abduction to adduction (1)</td><td>Hip/shoulder (1)</td></tr>
</table>
NB Must be range – i.e. flexion and extension etc

Accept other appropriate responses
PART (a)
Accept rotation and flexion to extension for ball and socket
NB Can credit same range of motion across joint types, provided correct for stated joint type

PART (b)
Accept example if correct for type of joint, even if incorrect range of movement given i.e. mark this independently of (a)</td><td>(6)</td></tr>
</table>

Question Number	Answer AO1 – 1 mark; AO3 – 1 mark	Mark
3 (c)	For example: • They are weight bearing/strong (1) this means the diver can start the dive on his hands/take his weight on his hands (to get more points for a harder dive) (1) Accept other appropriate responses 1 mark for identification of use (AO1) 1 mark for the importance of this on the diver (AO3)	**(2)**

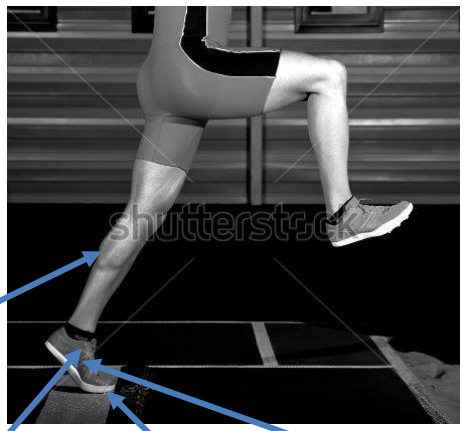
Question Number	Answer AO1 – 2 marks; AO2 – 2 marks; AO3 – 2 marks	Mark
4 (a&b&c)		**(6)**

(a) Classification of muscle type	**(b) Example of muscle type**	**(b) Role of the muscle type during exercise**
Involuntary (1)	In blood vessels/digestive system (1)	Contract/relax to alter blood flow/redistribution of blood flow (1)
Cardiac (1)	The heart (1)	Pump blood/oxygen around the body/CO_2 transport (1)

Accept other appropriate responses

Question Number	Answer AO1 – 2 marks	Mark
5 (a)	1 mark for each correct energy source **Anaerobic** • Carbohydrate (1) **Aerobic** • Fat (1) Accept other appropriate response **NB** Can accept carbohydrate/glycogen/glucose once for either system **BUT** not both **DNA** Examples of energy sources, e.g. pasta **DNA** Carbs as not correct technical language	**(2)**

Question Number	Answer AO1 – 2 marks	Mark
5 (b)	• Anaerobic (1) because oxygen is not used /is not available (1) Accept other appropriate responses 1 mark for correct identification of exercise type 1 mark for suitable expansion indicating why lactic acid is produced	**(2)**

Question Number	Answer AO1 – 1 mark; AO3 – 3 marks	Mark
6 (a)	For example: • Because in second class lever systems the resistance falls between the fulcrum and the effort (1), this is shown in Figure 6 as the body weight is the resistance (1) the fulcrum is the ball of the foot (1) and the effort is the force produced by the muscle/gastrocnemius (1) Accept other appropriate response  1 mark for identification of characteristic of second class lever system (AO1) 1 mark for each aspect of analysis to justify why this ais a second class lever (AO3) – maximum of 3 marks for this aspect	**(4)**

Question Number	Answer AO1 – 1 mark; AO2 – 1 mark	Mark
6 (b)	For example: • Because the body is a heavy load that needs to be lifted off the ground (1) which can be moved by a relatively small amount of force from the muscle (to give the jumper the required height) (1) • Because the effort arm is longer than the resistance arm (1) therefore a heavy load/weight of jumper can be lifted with relatively little effort (1) Accept other appropriate responses 1 mark for reference to the body weight being a heavy load (AO2) 1 mark for this being relatively easy to move (AO1)	**(2)**

Question Number	Answer AO2 – 2 marks	Mark
7 (a)	<table><tr><th>**Movement pattern**</th><th>**Plane**</th><th>**Axis**</th></tr><tr><td>**Cartwheel**</td><td>Frontal (1)</td><td>Sagittal (1)</td></tr></table>	**(2)**

Question Number	Answer AO2 – 2 marks	Mark
7 (b)	<table><tr><th>**Movement pattern**</th><th>**Plane**</th><th>**Axis**</th></tr><tr><td>**Piked somersault**</td><td>Sagittal (1)</td><td>Frontal (1)</td></tr></table>	**(2)**

Question Number	Answer AO2 – 1 mark; AO3 – 1 mark	Mark
8 (a)	For example • Gastrocnemius contracts/ is the agonist/the antagonistic pair allow plantar-flexion at the ankle (1) • which means greater force can be applied/can jump higher/can push off the ground to take off (1) Accept other appropriate responses. 1 mark for analysis of antagonistic action (AO3) 1 mark for impact on performance (AO2)	**(2)**

Question Number	Answer AO1 – 1 mark; AO2 – 1 mark; AO3 – 1 mark	Mark
8 (b)	For example: The hamstrings/antagonist relax (1) so that the quadriceps/agonist can contract (1) to bring about extension of the leg at the knee (1) Accept other appropriate responses. 1 mark for knowledge of antagonistic pair (AO1) 1 mark for subsequent agonist action (AO2) 1 mark for joint action (AO3)	**(3)**

Question Number	Answer AO2 – 1 mark; AO3 – 1 mark	Mark
8 (c)	For example: • (If he eats too many calories) he will put on weight (1) which will make it harder for him to lift his body weight over the bar/he won't be able to jump as high (1) • (If he doesn't eat enough) he will not have the required energy for his activity (1) therefore he won't jump as well due to feeling fatigued (1) Accept other appropriate responses. 1 mark for judgment/rationale for impact of not maintaining correct energy balance (AO3) 1 mark for linking this to high jump performance (AO2)	**(2)**

Question Number	Answer AO1 – 1 mark; AO2 – 1 mark; AO3 – 1 mark	Mark
8 (d)	For example: • Protein allows for muscle growth (1), with stronger muscles he can jump higher (1), as the muscles can apply more force (1) • Training will cause micro tears to the muscle (1) therefore Mohamed will need protein to repair this damage (1) otherwise he will make the injury worse and have to stop training to recover (1) Accept other appropriate responses. 1 mark for role of protein (AO1) 1 mark for linking role to high jump performance (AO2) 1 mark for judgment/rationale of impact on performance (AO3)	**(3)**

Question Number	Answer AO3 – 1 mark	Mark
9 (a)	1 mark for correct indication of most likely trend • Her mile time will be slower/2 seconds longer/+18 seconds (1) Accept other appropriate responses	**(1)**

Question Number	Answer AO1 – 1 mark; AO2 – 1 mark	Mark
9 (b)	For example: • She needs to take water because when she exercises, she will lose water through sweating (1) so this helps her avoid dehydration/to remain hydrated (1) • To prevent dehydration (1) otherwise she may become dizzy/faint/lose concentration/lose coordination due to dehydration (1) Accept other appropriate responses. 1 mark for reference to hydration (AO1) 1 mark for linking this to marathon running (AO2)	**(2)**

Question Number	Answer AO1 – 1 mark; AO2 – 1 mark; AO3 – 1 mark	Mark
9 (c)	For example: • Event requires a lot of energy (1), this makes sure she has more energy (1), so she can run faster for longer (1) • To make sure she has enough energy (1) as there are insufficient stores in body for this long an event (1) With more energy she can maintain pace/run faster for longer/complete the marathon (1) Accept other appropriate responses. 1 mark for link between carbohydrate and energy (AO1) 1 mark for applied knowledge – not enough for event (AO2) 1 mark for impact on performance (AO3)	**(3)**

Question Number	Answer AO1 – 2 marks	Mark
10 (a)	1 mark for each correct response, to a maximum of **2** marks. For example: • Reduced risk of CHD (1) accept other CV related benefits, e.g. lower blood pressure; less risk of diabetes • Reduced risk of osteoporosis (1) accept other skeletal benefits, e.g. increased bone density/strength • Reduced risk of overweight/overfat/obesity (1) (**NB** Must be appropriate terminology) • Improved muscle tone/strength (1) **NB** This is **NOT** awarded for 'looking good'… Accept other appropriate responses.	**(2)**

Question Number	Answer AO1 – 1 mark; AO2 – 1 mark	Mark
10 (b)	For example: • As there are other people at the club they can make new friends (1) which increases their opportunity to socialise with others (1) • The students work with others at the club (1) therefore are developing their team-work/social skills (1) Accept other appropriate responses. 1 mark for identification of social benefit (AO1) 1 mark for linking this to being at the fitness club (AO2)	**(2)**

Question Number	Answer AO1 – 1 mark; AO3 – 1 mark	Mark
10 (c)	For example: • To see if the programme is having the desired effect (1) or if it needs adapting (1) • So that the students know if their fitness/health is improving (1) otherwise they will need to amend their PEP (1) • So the students see improvement (1) which will motivate them to continue with the training (1) Accept other appropriate responses. 1 mark for reason for monitoring training (AO1) 1 mark for explaining the impact of this on the student and their training (AO3)	**(2)**

Question Number	Answer AO1 – 2 marks	Mark
10 (d)	1 mark for each correct response, to a maximum of **2** marks. For example: • Diet (1) e.g. eat a balanced diet/style of cooking • Work/rest/sleep balance (1) e.g. make sure they have enough sleep • (Avoid) recreational drugs (1) e.g. don't smoke/drink alcohol Accept other appropriate responses.	**(2)**

Question Number	Answer AO1 – 2 marks	Mark
11 (a)	1 mark for each correct factor, to a maximum of **2** marks • Height (1) • Bone structure (1) • Muscle girth (1) Accept other appropriate responses.	**(2)**

Question Number	Answer AO1 – 1 mark; AO3 – 1 mark	Mark
11 (b)	For example: • Men tend to have more muscle than women/tend to be taller (1) therefore they will weigh more/have a higher optimum weight (1) Accept other appropriate responses. 1 mark for identifying difference causing difference in optimum weight (AO1) 1 mark for impact of this on optimum weight (AO3)	**(2)**

Question Number	Indicative content AO1 – 3 marks; AO2 – 3 marks; AO3 – 3 marks	Mark
12	Reward acceptable answers. Responses may include, but are not limited to, the following: **Knowledge and understanding of the different muscle fibre types (AO1).** Factual statements about the fibre types: • Characteristic of fast twitch/type IIx/type IIb fibre • Characteristic of type IIa fibre • Characteristic of slow twitch/type I fibre **Application of knowledge, linking the fibre type to <u>relevant aspect of the game</u> (AO2).** NB – single jump – type llx, however could also be use llx for sprinting (if short sprint): • Type IIx provide the most powerful contraction (AO1) so Dexter will use these fibre types to get the required height for the tipoff/to produce the required force to accelerate away from opponent (AO2) • Type IIa can be used for sustained high intensity/anaerobic work (AO1), so Dexter will use them when sprinting up and down the court (AO2) • Type 1 fibres produce the least amount of force of the fibre types (AO1) so they will be used in low intensity parts of the game when jogging back into position (AO2) **Evaluation of topic – making reasoned judgements about the importance of the three different muscle fibre types to the performer (AO3):** • Type IIx is essential as it provides the height needed to reach the ball first /jump higher to make first contact, without this the opposition would always get possession. • Type IIa are important to allow repeated sprints within the game so the player can maintain high intensity runs (AO3) • All three fibre types have a role within the game; however, fast twitch fibres allow the player to be quickest to the ball/jump higher, so they are more important than slow twitch fibres. Students who only show achievement against AO1 will not be able to gain marks beyond Level 1.	**(9)**

Level	Mark	Descriptor
	0	No rewardable material
1	1-3	• 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	• Demonstrates mostly accurate knowledge and understanding, including appropriate use of technical language in places (AO1). • Applied knowledge to question context (AO2). • Attempts at drawing conclusions, with some support from relevant evidence (AO3 – evaluation).
3	7-9	• 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).