GCSE
PHYSICAL EDUCATION
8582/1

Paper 1 The human body and movement in physical activity and sport

Mark scheme

June 2025

Version: 1.0 Final

256G8582/1/MS

Mark schemes are prepared by the Lead Assessment Writer 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 associates participate in and is the scheme which was used by them in this examination. The standardisation process ensures that the mark scheme covers the students' responses to questions and that every associate understands and applies it in the same correct way. As preparation for standardisation each associate analyses a number of students' scripts. Alternative answers not already covered by the mark scheme are discussed and legislated for. If, after the standardisation process, associates encounter unusual answers which have not been raised they are required to refer these to the Lead Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of students' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

No student should be disadvantaged on the basis of their gender identity and/or how they refer to the gender identity of others in their exam responses.

A consistent use of 'they/them' as a singular and pronouns beyond 'she/her' or 'he/him' will be credited in exam responses in line with existing mark scheme criteria.

Further copies of this mark scheme are available from aqa.org.uk

Level of response marking instructions

Level of response mark schemes are broken down into levels, each of which has a descriptor. The descriptor for the level shows the average performance for the level. There are marks in each level.

Before you apply the mark scheme to a student's answer read through the answer and annotate it (as instructed) to show the qualities that are being looked for. You can then apply the mark scheme.

Step 1 Determine a level

Start at the lowest level of the mark scheme and use it as a ladder to see whether the answer meets the descriptor for that level. The descriptor for the level indicates the different qualities that might be seen in the student's answer for that level. If it meets the lowest level then go to the next one and decide if it meets this level, and so on, until you have a match between the level descriptor and the answer. With practice and familiarity you will find that for better answers you will be able to quickly skip through the lower levels of the mark scheme.

When assigning a level you should look at the overall quality of the answer and not look to pick holes in small and specific parts of the answer where the student has not performed quite as well as the rest. If the answer covers different aspects of different levels of the mark scheme you should use a best fit approach for defining the level and then use the variability of the response to help decide the mark within the level, ie if the response is predominantly level 3 with a small amount of level 4 material it would be placed in level 3 but be awarded a mark near the top of the level because of the level 4 content.

Step 2 Determine a mark

Once you have assigned a level you need to decide on the mark. The descriptors on how to allocate marks can help with this. The exemplar materials used during standardisation will help. There will be an answer in the standardising materials which will correspond with each level of the mark scheme. This answer will have been awarded a mark by the Lead Examiner. You can compare the student's answer with the example to determine if it is the same standard, better or worse than the example. You can then use this to allocate a mark for the answer based on the Lead Examiner's mark on the example.

You may well need to read back through the answer as you apply the mark scheme to clarify points and assure yourself that the level and the mark are appropriate.

Indicative content in the mark scheme is provided as a guide for examiners. It is not intended to be exhaustive and you must credit other valid points. Students do not have to cover all of the points mentioned in the Indicative content to reach the highest level of the mark scheme.

An answer which contains nothing of relevance to the question must be awarded no marks.

0 1	Which **one** of these functions of the skeleton helps the body to fight off infections? **[1 mark]**

Marks for this question: AO1 = 1

Answer A – Blood cell production (1)

0 2	Which **one** of these bones is found at the knee joint? **[1 mark]**

Marks for this question: AO1 = 1

Answer D – Tibia (1)

0 3	Which **one** of these can be defined as 'the amount of blood pumped out of the heart by each ventricle during one contraction'? **[1 mark]**

Marks for this question: AO1 = 1

Answer C – Stroke volume (1)

0 4	Which **one** of these principles of training describes 'specificity'? **[1 mark]**

Marks for this question: AO1 = 1

Answer C – Training that is suited to a particular sport or activity (1)

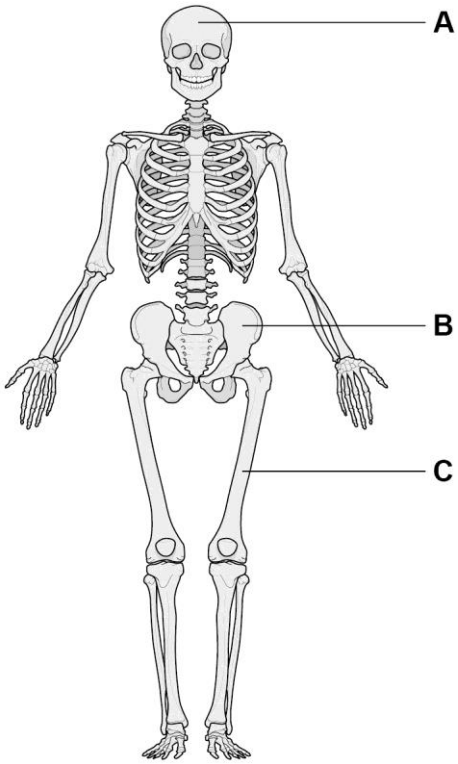
0 5	Which **one** of these occurs when the leg bends at the knee whilst running? **[1 mark]**

Marks for this question: AO2 = 1

Answer A – The hamstrings contract and the quadriceps relax (1)

0 6 **Figure 1** shows a human skeleton.

Figure 1



Identify the bones labelled **A**, **B** and **C** in **Figure 1**.

[3 marks]

Marks for this question AO1 = 3

Award **one** mark for each of the following up to a maximum of **three** marks.

- **A** = Cranium (1)
- **B** = Pelvis/Ilium/Ischium (1)
- **C** = Femur (1)

Maximum 3 marks

0 7	Name **three** muscles found at the shoulder. **[3 marks]**

Marks for this question AO1 = 3

Award **one** mark for each of the following points up to a maximum of **three** marks.

- Deltoid (1)
- Rotator cuff (1)
- Pectorals (1)
- Latissimus dorsi (1)

Accept any other suitable response (eg Trapezius, Biceps, Triceps, Rhomboids)

Maximum 3 marks

0 8	Muscles work in antagonistic pairs. State the role of the agonist. **[1 mark]**

Marks for this question AO1 = 1

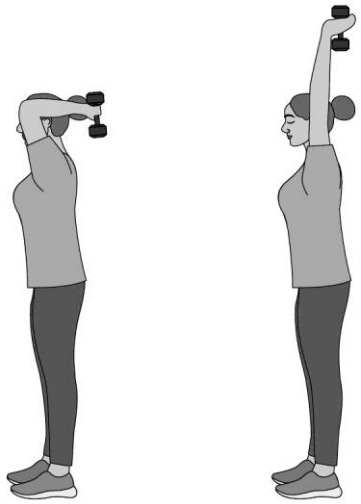
Award **one** mark for stating the role of the agonist.

- A muscle or group of muscles responsible for movement (1)
- A muscle or group of muscles that contract (1)

Maximum 1 mark

0 9 **Figure 2** shows an individual lifting a weight.

Figure 2



Use **Figure 2** to help you answer **Questions 9.1 to 9.2**.

0 9 . 1 Identify the joint action taking place at the **elbow** as they move the weight from **A** to **B**.

[1 mark]

Marks for this question AO2 = 1

Award **one** mark for identifying the joint action at the **elbow** as they move the weight from **A** to **B**.

- Extension (1)

Maximum 1 mark

0 9 . 2 Identify the type of isotonic muscle contraction that is taking place at the **elbow** as they move the weight from **A** to **B**.

[1 mark]

Marks for this question AO2 = 1

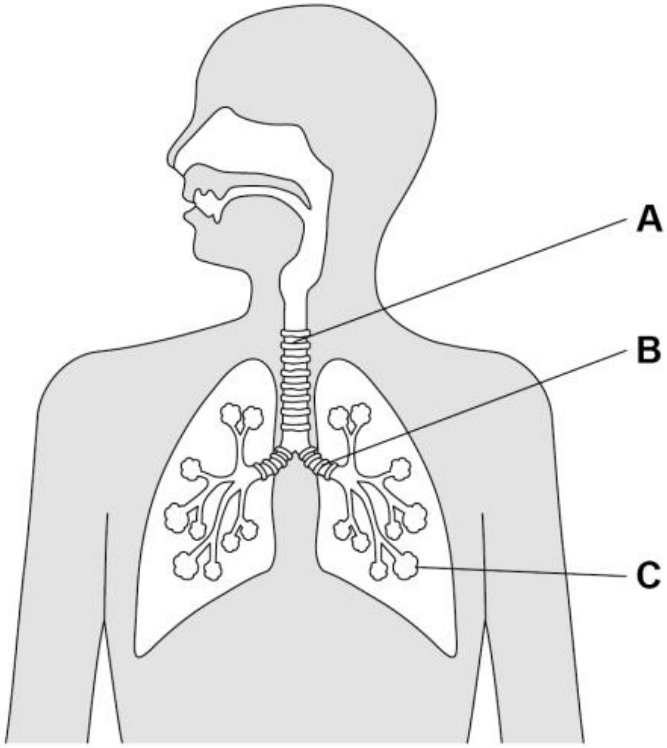
Award **one** mark for identifying the type of isotonic muscle contraction at the **elbow** as they move the weight from **A** to **B**.

- Concentric (1)

Maximum 1 mark

1 0 **Figure 3** shows structures in the respiratory system.

Figure 3



1 0 . 1 Identify the structures labelled **A**, **B** and **C** in **Figure 3**.

[3 marks]

Marks for this question AO1 = 3

Award **one** mark for each of the following up to a maximum of **three** marks.

- **A** = Trachea (1)
- **B** = Bronchi (1)
- **C** = Alveoli (1)

Maximum 3 marks

1 0 . 2 State what process occurs at **C** in **Figure 3**.

[1 mark]

Marks for this question AO1 = 1

Award **one** mark for stating what process will occur at **C** in **Figure 3**.

- Gaseous exchange (1)
- Diffusion (1)

Maximum 1 mark

1 1 Define expiratory reserve volume (ERV).

Identify what happens to ERV during exercise.

[2 marks]

Marks for this question AO1 = 1, AO2 = 1

Award **one** mark for a definition and **one** further mark for an example.

AO1 (sub-max 1 mark)

- The amount of air that could be breathed out above tidal volume (1)
- The maximum amount of additional air that can be forced out of the lungs after a normal breath (1)

AO2 (sub-max 1 mark)

- It decreases (1)

Maximum 2 marks

1	2	Name **one** flat bone **and** the vital organ it protects. Give **one** example from sport of where this occurs. **[3 marks]**

Marks for this question AO1 = 2, AO2 =1

Award **one** mark for each of the following up to a maximum of **three** marks.

AO1 (sub max 2 marks)

- Cranium (1) brain (1)
- Ribs/Sternum (1) heart and lungs (1)
- Pelvis (1) reproductive organs (1)

AO2 (sub max 1 mark)

- (Cranium protects the brain) – heading the ball in football (1)
- (Ribs/Sternum protects the heart and lungs) – when getting hit in boxing (1)
- (Pelvis protects the reproductive organs) – when getting tackled in rugby (1)

Accept any other suitable response.

Maximum 3 marks

1 3 . 1 Define reaction time.

Give a sporting example.

[2 marks]

Marks for this question: AO1 = 1, AO2 = 1

Award **one** mark for each of the following points up to a maximum of **two** marks

AO1

- Reaction time – The time taken to initiate a response to a stimulus (1)

AO2

- Returning a fast serve in tennis (1)
- Sprint start in a 100m race (1)

Accept any other suitable response.

Maximum 2 marks

1 3 . 2 Define agility.

Give a sporting example.

[2 marks]

Marks for this question: AO1 = 1, AO2 = 1

Award **one** mark for each of the following points up to a maximum of **two** marks

AO1

- The ability to change direction quickly (1)

AO2

- Dodging a player in netball (1)
- Dribbling around a defender in football (1)

Accept any other suitable response.

Maximum 2 marks

1 4 . 1 Describe how to carry out the Illinois Agility Test.

[3 marks]

Marks for this question: AO1 = 3

Award **one** mark for each of the following points up to a maximum of **three** marks.

- 10m long × 5m wide (1)
- Subject starts lying down (1)
- Subject runs as fast as they can (1)
- Subject weaves around cones (1)
- Time taken/measured in seconds (1)

NB A diagram can be credited up to two marks (1 mark for drawing showing weaving around cones and 1 mark for correct measurements)

Maximum 3 marks

1 4 . 2 Evaluate the use of the Illinois Agility Test as a suitable fitness test for a 100m sprinter.

[4 marks]

Marks for this question: AO3 = 4

Award **one** mark for each of the following points up to a maximum of **four** marks.

Agree

- The Illinois agility test requires speed which is essential in a 100 m sprint (1)
- Acceleration is required when sprinting to the lines or between the cones (1)
- Reaction time is important at the start of the test, similar to that of starting a 100 m sprint to get the best possible time (1)

Disagree

- The test does not require the performers to sprint in a straight line and they need to change direction (1)
- The test does not replicate the distance run in the 100 m sprint (1)
- There are more suitable tests for a 100 m sprinter, notably the 30 m sprint test to measure speed or the ruler drop test to measure reaction time which assists a fast start to the race (1)

1	**5**	Name the type of joint at the knee. **[1 mark]**

Marks for this question: AO1 = 1

Award **one** mark for identifying the type of joint at the knee.

- Hinge (1)
- Hinge joint (1)

Maximum 1 mark

1	**6**	Identify the type of joint where rotation can take place. **[1 mark]**

Marks for this question AO1 = 1

Award **one** mark for Identifying the type of joint where rotation can take place.

- Ball and socket joint (1)
- Pivot Joint (1)

Maximum 1 mark

1	**7**	Outline **three** reasons why a cool down is important after exercise. **[3 marks]**

Marks for this question: AO1 = 3

Award **one** mark for each of the following points up to a maximum of **three** marks.

- Allows the body to recover (1)
- Removes lactic acid/CO2/waste products (1)
- Prevents (delayed onset of) muscle soreness or DOMS (1)
- Brings body temperature slowly back down to normal level (1)
- Allows breathing rate or heart rate to return to its resting **state slowly** (1)
- To help repay oxygen debt (1)
- Prevents blood pooling (1)
- Increase a range of movement (1)

Accept any other suitable response

Maximum 3 marks

1	8	Explain how wearing appropriate footwear in a sporting activity can reduce the risk of an injury. **[2 marks]**

Marks for this question: AO2 = 2

Award **one** mark for each of the following points up to a maximum of **two** marks.

- Football – should have studs in boots (1) which avoids slipping (1)
- Running – should be thick soled or cushioned (1) to absorb shock (1)
- Basketball – should have ankle or foot support (1) to stabilise the ankle when landing (1)

Accept any other suitable response.

NB Do not award marks unless the candidate makes reference to a sporting activity.

Maximum 2 marks

1	9

Figure 4 shows a weightlifter holding a weight above their head.

Figure 4

Identify the type of strength that the weightlifter is using in **Figure 4**.

Justify your answer.

[3 marks]

Marks for this question: AO2 = 1, AO3 = 2

Award **one** mark for the identifying the type of strength and up to a further **two** marks for justifying the type of strength being used.

Type of strength (sub max 1)

- Static (1)

Justification (sub max 2)

- Isometric contraction is taking place (muscles stay the same length) (1)
- No movement is taking place (1)
- Force applied is maintained (1)

Accept any other suitable response.

NB Do not award marks for the justification if the candidate has not identified static strength.

Maximum 3 marks

2	**0**	Define delayed onset of muscular soreness (DOMS). Explain how massage can reduce the effect of DOMS. **[4 marks]**

Marks for this question: AO1 = 1, AO2 = 3

Award **one** mark for a definition and a further **three** marks for the explanation.

AO1 (sub max 1)

- The pain/stiffness felt in the days following strenuous/vigorous exercise (1)
- The pain felt in the muscles the day after exercise (1)

AO2 (sub max 3 mark)

- Massage can alleviate pain or soreness or stiffness enabling the performer to recover quicker (1)
- Massage can increase flexibility (reduces tension and increases muscle elasticity) (1)
- Massage increases muscle temperature or blood circulation (1)
- Massage helps by reducing muscle inflammation (1)
- Massage may allow the muscle to relax (1)
- Massage with high pressure on specific muscles can assist in the removal of lactic acid and other waste products (1)

Accept any other suitable response.

Maximum 4 marks

2	**1**

Figure 5 shows an individual performing a star jump.

Figure 5

Identify the plane and axis of movement at the hip when the individual in **Figure 5** is performing a star jump.

[2 marks]

Marks for this question: AO2 = 2

Award **one** mark for each of the following points up to a maximum of **two** marks.

- Frontal plane (1)
- Sagittal axis (1)

Maximum 2 marks

2	**2**	State whether the 100m race in athletics is an aerobic or anaerobic event. Justify your answer. **[4 marks]**

Marks for this question: AO2 = 1, AO3 =3

Award **one** mark for each of the following points up to a maximum of **four** marks.

AO2 (sub-max 1 mark)

- Anaerobic (1)

AO3 (sub-max 3 marks)

- 100m is a sprint event which lasts a short period of time (1)
- Maximal intensity or effort means insufficient oxygen is available to work aerobically (1)
- Energy demand is higher than oxygen available (1)
- No reduction in intensity/time to rest to repay oxygen debt (1)
- Body uses glucose → energy + lactic acid because of the lack of oxygen (1)

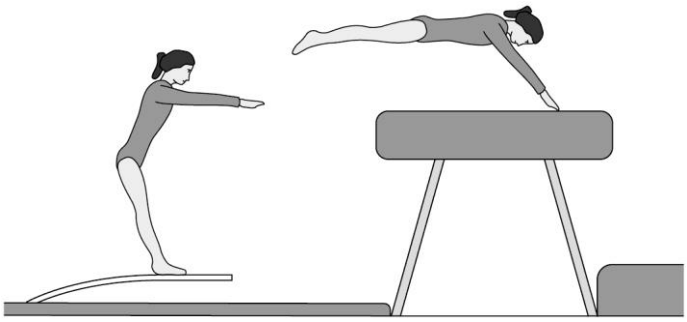
Credit any other suitable response.

NB Do not award marks for the justification if the candidate does not state anaerobic.

Maximum 4 marks

2 3 **Figure 6** shows the take off phase as a gymnast completes a vault.

Figure 6



Use **Figure 6** to help answer the following questions.

2 3 . 1 Identify the class of lever system used at the ankle whilst taking off in a gymnastic vault in **Figure 6**.

[1 mark]

Marks for this question: AO2 = 1

Award **one** mark for identifying the class of lever in **Figure 6**.

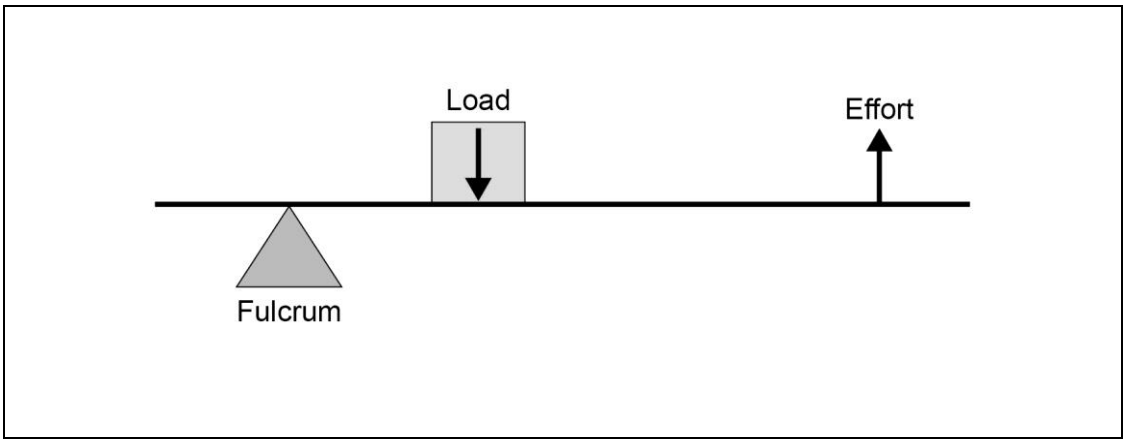
- Second class lever (1)

Maximum 1 mark

2 3 . 2 Draw a fully labelled diagram to show the class of lever identified in **Question 23.1**.

[2 marks]

Marks for this question AO2 = 2



Award **one** mark for each of the following:

- A correctly drawn diagram (1) – effort arrow pointing in the correct direction, load above the line, fulcrum below the line, effort above or below the line.
- A correctly labelled diagram (1) – accept resistance instead of load and R/L F and E.

NB Do not award marks for drawing a second class lever if the candidate does not identify a second class lever in **Question 23.1**

Maximum 2 marks

2 3 . 3 Define balance.

Justify the importance of balance for a gymnast.

[3 marks]

Marks for this question: AO1= 1, AO3 =2

Award **one** mark for each of the following points up to a maximum of **three** marks.

AO1 (sub-max 1 mark)

- The ability to maintain the body's centre of mass above the base of support. (1)

AO3 (sub-max 2 marks)

- Required to keep a stable posture to ensure that control of the body is maintained. (1)
- To be able to perform complex or high tariff movements (1)
- To avoid toppling or falling over or over rotating (1)
- To access a high performance score from the judges (1)

Accept any other suitable justification of why balance is an important component of fitness. Answers must refer to a gymnast.

Maximum 3 marks

2 4 **Figure 7** shows the national averages for the Sit-Up Bleep Test for males and females.

Figure 7

Male

Muscular endurance	Age		
	20–29	**30–39**	**40–49**
Excellent	48+	40+	35+
Good	38–47	31–39	26–34
Average	34–37	27–30	22–25
Below Average	26–33	21–26	15–21
Poor	below 26	below 21	below 15

Female

Muscular endurance	Age		
	20–29	**30–39**	**40–49**
Excellent	38+	30+	26+
Good	29–37	24–29	20–25
Average	23–28	19–23	14–19
Below Average	16–22	12–18	10–13
Poor	below 16	below 12	below 10

2 4 . 1 George and Lisa have completed the Sit-Up Bleep Test. The following results were recorded.

- George is a 26 year-old male and scored 43.
- Lisa is a 34 year-old female and scored 22.

Identify the level of George and Lisa's muscular endurance using the data in **Figure 7**.

[2 marks]

Marks for this question: AO2 = 2

- George – good (1)
- Lisa – average (1)

Maximum 2 marks

2 4 . 2 Identify why the score for the Sit-Up Bleep Test is quantitative data.

[1 mark]

Marks for this question: AO2 = 1

Award **one** mark for the following:

- The score is a number (1)

Maximum 1 mark

2	**5**	Analyse how redistribution of blood during exercise can improve performance when cycling 30 miles. **[6 marks]**

Marks for this question: AO1 = 1, AO2 = 2, AO3 = 3

Level	Marks	Description
3	5–6	Knowledge of redistribution of blood is accurate and generally well detailed. Application to cycling 30 miles is mostly clear and effective. Analysis is thorough, reaching valid and well-reasoned links to the impact on performance. The answer is generally clear, coherent and focused, with appropriate use of terminology throughout.
2	3–4	Knowledge of redistribution of blood is evident but is more detailed for some aspects than others. There is some appropriate and effective application to cycling 30 miles, although not always presented with clarity. Any analysis is clear but reaches valid and well-reasoned links to only some impacts on performance. The answer lacks coherence in places, although terminology is used appropriately on occasions.
1	1–2	Knowledge of redistribution of blood is limited. Application to cycling 30 miles is either absent or inappropriate. Analysis is poorly focused or absent, with few or no reasoned links to any impact on performance. The answer as a whole lacks clarity and has inaccuracies. Terminology is either absent or inappropriately used.
0	0	No relevant content.

Possible content may include:

AO1 – Knowledge of redistribution of blood eg

- Vasodilation – arterioles become wider, increasing blood flow.
- Vasoconstriction – arterioles become smaller, restricting blood flow to those tissues.

AO2 – Application to cycling 30 miles eg

- During a 30 mile cycle ride vasodilation will occur to the working muscles.
- Particularly to muscles in the legs eg quadriceps group/gastrocnemius.
- During a 30 mile cycle ride vasoconstriction will occur to non-essential organs/no working muscles.
- This could include the stomach and/or muscles in the arms eg biceps/triceps.

AO3 – Analysis of how redistribution of blood during exercise can improve performance when cycling 30 miles eg

- Working muscles receive more blood during exercise.
- Blood contains oxygen carried by haemoglobin as oxyhaemoglobin.
- This extra oxygen allows the cyclist to work aerobically for longer/higher intensities.
- Therefore they can cycle for longer/at a higher average speed without producing lactic acid, which would cause fatigue resulting in them having to slow down/stop.
- This means they can complete the ride in a faster time.

Accept any other appropriate analysis of how redistribution of blood during exercise can improve performance when cycling 30 miles.

Maximum 6 marks

2	**6**	Analyse how the long-term effects of regular continuous training would improve a runner's performance in a marathon. **[9 marks]**

Marks for this question: AO1 = 2, AO2 = 2, AO3 = 5

Level	Mark	Descriptor
3	7–9	Knowledge of regular continuous training is accurate and generally well detailed. Application to a runner is mostly appropriate, clear and effective. Evaluation is thorough, reaching valid and well-reasoned conclusions for the appropriateness of regular continuous training. The answer is generally clear, coherent and focused, with appropriate use of terminology throughout.
2	4–6	Knowledge of regular continuous training is evident. There is some appropriate and effective application to a runner, although not always balanced and presented with clarity. Any evaluation is clear reaching valid and well-reasoned conclusions for some points on appropriateness more than others. The answer lacks coherence in places, although terminology is used appropriately on occasions.
1	1–3	Knowledge of regular continuous training is limited. Application to a runner is either absent or inappropriate. Evaluation is poorly focused or absent, with few or no reasoned conclusions. The answer as a whole lacks clarity and has inaccuracies. Terminology is either absent or inappropriately used.
0	0	No relevant content.

Possible content may include:

AO1 – Knowledge of continuous training eg

- Sustained exercise at a constant rate (steady state) without rests.
- Involves aerobic demand for a minimum of 20 minutes.
- Aerobic exercise is that completed with oxygen/when exercise is not too fast and is steady, the heart can supply all the oxygen that the working muscles need.
- eg running, swimming, rowing, cycling.

AO2 – Long term effects of continuous training eg

- Body shape may change due to a decrease in weight.
- Improved muscular endurance from repetitive actions.
- Improved cardiovascular endurance/stamina.
- Increased size of the heart (hypertrophy).
- lower resting heart rate (bradycardia).

AO3 – Analysis of how the long-term effects of regular continuous training would improve performance in a marathon eg

- If the athlete is lighter they will require less energy to carry their weight around the course meaning they will delay the onset of fatigue/be able to run at a faster average pace.
- Improved muscular endurance will mean that the specific muscles they are using eg quadriceps/gastrocnemius will be able to produce greater force for longer periods of time before they fatigue.
- A larger heart will mean more blood can be pumped out per beat/increased stroke volume.
- This will result in more oxygen being delivered to working muscles so they can perform aerobically even when the athlete is running at higher intensities.
- Lower resting heart rate combined with a higher SV means that an athlete is able to work at higher intensities with a lower HR which means they will be able to exercise at a higher intensity for longer/they will fatigue more slowly.
- As a marathon is an aerobic event cardiovascular endurance/stamina is the most important component of fitness.
- If the runner has higher levels of cardiovascular endurance/stamina they will be able to run at a higher average speed over the duration of the race increasing their chances of winning/achieving a PB.

Accept any other relevant analysis of how the long-term effects of regular continuous training would improve performance in a marathon.

Question	AO1	AO2	AO3
1	1		
2	1		
3	1		
4	1		
5		1	
6	3		
7	3		
8	1		
9.1		1	
9.2		1	
10.1	3		
10.2	1		
11	1	1	
12	2	1	
13.1	1	1	
13.2	1	1	
14.1	3		
14.2			4
15	1		
16	1		
17	3		
18		2	
19		1	2
20	1	3	
21		2	
22		1	3
23.1		1	
23.2		2	
23.3	1		2
24.1		2	
24.2		1	
25	1	2	3
26	2	2	5
Total	**33**	**26**	**19**