



Oxford Cambridge and RSA

GCSE

Physical Education

J587/01: Physical factors affecting performance

General Certificate of Secondary Education

Mark Scheme for June 2023

OCR (Oxford Cambridge and RSA) is a leading UK awarding body, providing a wide range of qualifications to meet the needs of candidates of all ages and abilities. OCR qualifications include AS/A Levels, Diplomas, GCSEs, Cambridge Nationals, Cambridge Technicals, Functional Skills, Key Skills, Entry Level qualifications, NVQs and vocational qualifications in areas such as IT, business, languages, teaching/training, administration and secretarial skills.

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This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which marks were awarded by examiners. It does not indicate the details of the discussions which took place at an examiners' meeting before marking commenced.

All examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes should be read in conjunction with the published question papers and the report on the examination.

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MARKING INSTRUCTIONS

PREPARATION FOR MARKING SCORIS

1. Make sure that you have accessed and completed the relevant training packages for on-screen marking: RM Assessor Online Training; OCR Essential Guide to Marking.
2. Make sure that you have read and understood the mark scheme and the question paper for this unit. These are posted on the RM Cambridge Assessment Support Portal <http://www.rm.com/support/ca>
3. Log-in to scoris and mark the 5 practice responses (“scripts”) and the 10 standardisation responses

YOU MUST MARK 5 PRACTICE AND 10 STANDARDISATION RESPONSES BEFORE YOU CAN BE APPROVED TO MARK LIVE SCRIPTS.

MARKING

1. Mark strictly to the mark scheme.
2. Marks awarded must relate directly to the marking criteria.
3. The schedule of dates is very important. It is essential that you meet the Scoris 50% and 100% (traditional 40% Batch 1 and 100% Batch 2) deadlines. If you experience problems, you must contact your Team Leader (Supervisor) without delay.
4. If you are in any doubt about applying the mark scheme, consult your Team Leader by telephone or the Scoris messaging system, or by email.

5. **Crossed Out Responses**

Where a candidate has crossed out a response and provided a clear alternative then the crossed out response is not marked. Where no alternative response has been provided, examiners may give candidates the benefit of the doubt and mark the crossed out response where legible.

Rubric Error Responses – Optional Questions

Where candidates have a choice of question across a whole paper or a whole section and have provided more answers than required, then all responses are marked and the highest mark allowable within the rubric is given. Enter a mark for each question answered into RM assessor, which will select the highest mark from those awarded. (The underlying assumption is that the candidate has penalised themselves by attempting more questions than necessary in the time allowed.)

Contradictory Responses

When a candidate provides contradictory responses, then no mark should be awarded, even if one of the answers is correct.

Short Answer Questions (requiring only a list by way of a response, usually worth only one mark per response)

Where candidates are required to provide a set number of short answer responses then only the set number of responses should be marked. The response space should be marked from left to right on each line and then line by line until the required number of responses have been considered. The remaining responses should not then be marked. Examiners will have to apply judgement as to whether a 'second response' on a line is a development of the 'first response', rather than a separate, discrete response. (The underlying assumption is that the candidate is attempting to hedge their bets and therefore getting undue benefit rather than engaging with the question and giving the most relevant/correct responses.)

Short Answer Questions (requiring a more developed response, worth two or more marks)

If the candidates are required to provide a description of, say, three items or factors and four items or factors are provided, then mark on a similar basis – that is downwards (as it is unlikely in this situation that a candidate will provide more than one response in each section of the response space.)

Longer Answer Questions (requiring a developed response)

Where candidates have provided two (or more) responses to a medium or high tariff question which only required a single (developed) response and not crossed out the first response, then only the first response should be marked. Examiners will need to apply professional judgement as to whether the second (or a subsequent) response is a 'new start' or simply a poorly expressed continuation of the first response.

6. Always check the pages (and additional objects if present) at the end of the response in case any answers have been continued there. If the candidate has continued an answer there then add SEEN to confirm that the work has been seen.
7. Award No Response (NR) if:

- there is nothing written in the answer space. Use SEEN annotation in the blank space.

Award Zero '0' if:



- anything is written in the answer space and is not worthy of credit (this includes text and symbols).

Team Leaders must confirm the correct use of the NR button with their markers before live marking commences and should check this when reviewing scripts.

- The scoris **comments box** is used by your team leader to explain the marking of the practice responses. Please refer to these comments when checking your practice responses. **Do not use the comments box for any other reason.** If you have any questions or comments for your team leader, use the phone, the scoris messaging system, or e-mail.
- Assistant Examiners will send a brief report on the performance of candidates to your Team Leader (Supervisor) by the end of the marking period. The Assistant Examiner's Report Form (AERF) can be found on the RM Cambridge Assessment Support Portal (and for traditional marking it is in the Instructions for Examiners). Your report should contain notes on particular strength displayed as well as common errors or weaknesses. Constructive criticism of the question paper/mark scheme is also appreciated.
- For answers marked by levels of response:
 - To determine the level** – start at the highest level and work down until you reach the level that matches the answer
 - To determine the mark within the level**, consider the following:

Descriptor	Award mark
On the borderline of this level and the one below	At bottom of level
Just enough achievement on balance for this level	Above bottom and either below middle or at middle of level (depending on number of marks available)
Meets the criteria but with some slight inconsistency	Above middle and either below top of level or at middle of level (depending on number of marks available)
Consistently meets the criteria for this level	At top of level

11. Annotations used in the detailed Mark Scheme

Screen Annotation	Meaning	Description/when to use
	Tick	A correct answer that deserves a mark
	Cross	A factually incorrect answer
BOD	Benefit of doubt	An answer that deserves the benefit of the doubt (must be accompanied by a tick)
TV	Too vague	An answer that is too vague to gain credit
REP	Repeat	A repeat of an answer that has already been credited
IRRL	Irrelevant	Significant amount of material which doesn't answer the question
SEEN	Seen	Seen by examiner but no credit given / indicates that an answer continues after a sub-max has been reached or nothing written in answer space and NR credited
BP	Blank page	Blank page (for any page with no candidate writing on it)
KU	Knowledge/Understanding	Knowledge and understanding / indicates AO1 on extended response Q (*)
EG	Example	Example/Reference / indicates AO2 on extended response Q (*)
DEV	Development	Development / indicates AO3 on extended response Q (*)
L1	Level 1	Level 1 response on extended response Q (*)
L2	Level 2	Level 2 response on extended response Q (*)
L3	Level 3	Level 3 response on extended response Q (*)
S	Sub-max	This indicates that a sub-max has been reached

- **KU, EG** and **DEV** used instead of ticks on the extended response question to indicate where knowledge or development points from the indicative content have been made.
- On the extended response question (*), one **KU, EG** or **DEV** does not mean one mark being awarded; the marking is based on a levels of response mark scheme which awards a level and mark holistically based upon the quality of the response overall against the levels descriptors.

Section A				
Question	Answer		Marks	Guidance
1			1 AO1	<p>Do not accept: tests of other components of fitness, e.g. press-up test / sit-up test / standing jump / vertical jump</p> <p>Do not accept: 'grip test' on its own = TV</p> <p>Do not accept: 'weightlifting' = TV</p> <p>Accept: hand grip test = BOD</p> <p>Accept: 'dynamometer' on its own = BOD</p> <p>Accept: grip dynamometer (or other similar misspellings) as BOD</p>
2	(a)	(i)	1 AO1	<p>Do not accept: straight or versions of this word = TV</p> <p>Do not accept: extension and flexion</p> <p>Accept: flexion to extension = ✓</p> <p>Accept: extend / extended</p>
		(ii)	1 AO2	<p>N.B. The word 'class' is not required as it is in the question.</p>
3	(a)		1 AO1	<p>Do not accept: calm = TV</p> <p>Accept: equivalent terms, e.g. light / slow / steady = ✓</p>

3	(b)	<p>Two marks for two of:</p> <ol style="list-style-type: none"> 1. Helps the body's transition back to a resting state OR speeds up recovery 2. Gradually lowers heart rate OR maintains elevated heart rate 3. Gradually reduces blood pressure 4. Maintains circulation of blood / oxygen 5. Gradually reduces breathing rate OR maintains elevated breathing rate 6. Gradually reduces body / muscle temperature OR maintains elevated body / muscle temperature 7. Speeds up removal of waste products / lactic acid 8. Reduces the risk of muscle soreness / aching muscles / DOMS / stiffness 9. Reduces the risk of blood pooling 10. Reduces the risk of damage to joints 11. Reduces the risk of fainting / lightheadedness / nausea 	<p>2 AO2</p>	<p>Mark first two responses only (see Point 5 in Marking Instructions – Short Answer Questions) If 2 correct benefits given under 1 on scaffold credit both. If a wrong answer is given under 1 but 2 correct benefits are given under 2, one mark only Do not accept: Lowers heart rate or breathing rate or body temperature without 'gradually' or equiv = TV. Do not accept: prevents / reduces build-up of lactic acid = TV Do not accept: removes lactic acid = TV (must say speeds up / helps or equiv.) Do not accept: reduce muscle fatigue = TV Do not accept: Gets oxygen into body = TV Do not accept: Reduces oxygen debt = TV Do not accept: reduced risk of injury = TV N.B. For pt. 8-11 use BOD for prevent / stop, e.g. prevent blood pooling = BOD</p>
4	(a) (i)	<p>One mark for:</p> <p>Alveoli</p>	<p>1 AO1</p>	<p>Accept: phonetic spellings Accept: alveolus = ✓</p>
	(a) (ii)	<p>One mark for:</p> <p>(Oxygen diffuses) into capillaries / blood / red blood cells / haemoglobin</p>	<p>1 AO1</p>	<p>Do not accept: 'out / outwards' on its own = TV (answers must say where O₂ goes to) Do not accept: oxygen goes to the heart = TV</p>

	<p>(a) (iii)</p>	<p>One mark sub-max for feature: One mark sub-max for function:</p> <table border="1" data-bbox="288 272 1305 823"> <thead> <tr> <th>Feature</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>1. Thin walls / one-cell thick / semi-permeable</td> <td>2. Small distance for oxygen / carbon dioxide / gases to pass through faster OR more efficient / faster gaseous exchange / diffusion</td> </tr> <tr> <td>3. Surrounded by capillaries</td> <td>4. To provide blood for gaseous exchange / diffusion</td> </tr> <tr> <td>5. Large surface area OR large number of alveoli</td> <td>6. more gases / oxygen / CO₂ can pass through OR more efficient gaseous exchange / diffusion</td> </tr> <tr> <td>7. Walls of alveoli are moist</td> <td>8. Gases dissolve to pass through OR more efficient gaseous exchange / diffusion</td> </tr> <tr> <td>9. Walls of alveoli contain elastic fibres</td> <td>10. Allows the walls to increase surface area slightly during inspiration</td> </tr> </tbody> </table>	Feature	Function	1. Thin walls / one-cell thick / semi-permeable	2. Small distance for oxygen / carbon dioxide / gases to pass through faster OR more efficient / faster gaseous exchange / diffusion	3. Surrounded by capillaries	4. To provide blood for gaseous exchange / diffusion	5. Large surface area OR large number of alveoli	6. more gases / oxygen / CO ₂ can pass through OR more efficient gaseous exchange / diffusion	7. Walls of alveoli are moist	8. Gases dissolve to pass through OR more efficient gaseous exchange / diffusion	9. Walls of alveoli contain elastic fibres	10. Allows the walls to increase surface area slightly during inspiration	<p>2 AO1</p>	<p>N.B. Mark 1st feature described only. If more than one feature is described, only mark the function of the first feature. Function cannot be credited unless feature is marked as correct. If feature is correctly identified in function it may be credited as long as a different answer for feature has not already been marked</p> <p>Do not accept: features of capillaries = IRRL Do not accept: ‘thin’ on its own = TV Do not accept: surrounded by a capillary = TV</p> <p>Accept: ‘membrane’ = BOD 1 Accept: allows for diffusion / gas exchange = BOD 2 or 8 but TV for 4 and 6 Accept: ‘more blood at the alveoli’ = BOD 4</p>
Feature	Function															
1. Thin walls / one-cell thick / semi-permeable	2. Small distance for oxygen / carbon dioxide / gases to pass through faster OR more efficient / faster gaseous exchange / diffusion															
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<p>5</p>		<p>Two marks for two of:</p> <ol style="list-style-type: none"> (Wearing / using) personal protective equipment / PPE OR e.g. knee / elbow pads / ankle supports / gumshield (Wearing / using) correct clothing / suitable / supportive footwear OR e.g. volleyball shoes with grip / to absorb impact of landings Having an appropriate level of competition OR e.g. players or teams of similar standard Lifting / carrying / using equipment safely OR e.g. 2 people to carry posts / ball trolleys Completing risk assessments or safety checks OR e.g. check court / floor is not wet / slippery / no jewellery / hair tied back 	<p>2 AO2</p>	<p>Do not accept: Warming up (in question) or reference to warm up components = REP or cooling down (question states before the activity) = X Do not accept: hydration / sleep = TV Do not accept: fair play / sportsmanship / play by rules = TV (not <u>before</u> a game) Do not accept: unused equipment not put away = TV Do not accept: protective footwear = TV Do not accept: use correct techniques = TV (not <u>before</u> a game)</p> <p>Accept: Knee / medical tape = BOD 1 Accept: Examples on their own, e.g. knee pads = ✓ 1 Accept: correct equipment = BOD 1 Accept: equipment set up properly = BOD 5</p>												

6	(a)	(i)	One mark for: De-oxygenated	1 AO1	
	(a)	(ii)	One mark for one of: 1. Thin walls 2. Large diameter OR wide / large lumen 3. Does not have valves	1 AO1	Do not accept: Has valves = X Do not accept: 'lumen' on its own = TV Do not accept: thick lumen = TV Do not accept: Carries (deoxygenated) blood (in question 6ai) or carries blood under low pressure (not a structure) Do not accept: large surface area = TV
7			One mark for: C Vasoconstriction	1 AO1	
8			One mark for: (Freely) moveable joint OR a joint that allows movement	1 AO1	Do not accept: contains synovial fluid / cartilage = TV Do not accept: definitions of a joint, e.g. where 2 bones meet Do not accept: 'movement at a joint' = TV
9			One mark for: Lactic acid	1 AO1	Accept: lactate
10			Two marks for: 1. The frontal plane runs vertically and divides the body into front and back sections. 2. A star jump is a practical example of a movement taking place in this plane.	2 AO3	

11		One mark for: Deltoid	1 AO1	Accept: Trapezius / trapezium = BOD
12	a	One mark for one of: 1. Slippery / wet surface / water / ice / frozen 2. Litter / glass / stones / faeces / stumps / wickets / bails / ball / bags / equipment 3. Uneven / damaged surface / holes / bare patches 4. Hard surface 5. Sightscreen / boundary rope / boundary flags	1 AO2	Mark 1st response only N.B. The question says on the surface of the cricket pitch, not the cricket ground. Do not accept: the effects of a hazard, e.g. Astro burn Do not accept: answers that are not found on the surface of an artificial pitch or are found off the pitch. Do not accept: short run-off (or equivalent) = TV Do not accept: footwear / spikes = TV Do not accept: sharp objects = TV Accept: tree (as a few pitches have a tree on pitch)
	b	One mark for one of: 1. Slippery / wet surface / water / muddy / ice / frozen 2. Litter / glass / stones / faeces / stumps / wickets / bails / ball / bags / equipment 3. Uneven / damaged surface / holes / bowlers footmarks 4. Hard surface 5. Sightscreen / boundary rope / boundary flags	1 AO2	Mark 1st response only Do not accept: Same response for 12 a (questions states different hazards) but answers can be from the same marking point Do not accept: 'grass' on its own (in question) = REP Do not accept: Hay fever / pollen = TV (not on surface) Do not accept: short run-off (or equivalent) = TV Do not accept: footwear / spikes = TV Do not accept: sharp objects = TV Accept: overgrown grass / clumps of grass / mole hills = ✓ pt. 3 Accept: tree (as a few pitches have a tree on pitch)
13		One mark for:	1 AO1	N.B. Drowning is a risk, not hazard

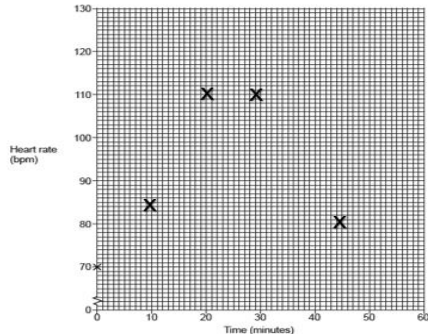
		False		
14		One mark for: Increased bone density OR stronger bones OR reduced risk of osteoporosis OR bones stay strong OR improve bone marrow OR increase blood cell production	1 AO1	Do not accept: Healthy bones (in question) use REP Do not accept: reduced risk of arthritis (question is about bones, not joints) = TV Do not accept: Increased mineral storage = TV Accept: (opposites, e.g.) stops bones becoming weak / brittle = BOD
15		One mark for: They are flexible / elastic OR they can stretch	1 AO1	Accept: references to range of movement or allows movement = BOD
16		One mark for: D Tibia	1 AO1	
17		One mark for: (Examples include but are not limited to:) sprinting / running / forward roll / biceps curl / kicking a football / heading a football / football throw-in / cycling / sit up / burpees / squats / deadlift / tumble turn / chest pass	1 AO3	Mark 1st response only Do not accept: somersault (in question) or front flip or back flip Use REP Do not accept: sports skills that have movements in other planes as well, e.g. tennis serve / cricket bowling / diving / throwing a ball / flat spin are all TV Do not accept: balances, e.g. handstand Do not accept: passing / shooting / throwing on its own = TV Accept: sports skills where the only movements are flexion / extension at joints
18		One mark for:	1 AO3	

		Longitudinal		
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19		<p>One mark for (practical example applied to training for a sprinter):</p> <p>Increase the number of sprints OR increase the number of reps / sets OR increase the weight / resistance / distance / speed run OR decrease recovery time between sprints / reps / sets</p>	<p>1 AO2</p>	<p>Do not accept: Response with no practical example, e.g. no reference to sprints / weights / reps or equivalent Do not accept: Responses to other sports / activities even if correct e.g. a body builder increases the amount of weight they lift = TV (question is for a sprinter) Do not accept: make exercises harder = TV Do not accept: use overload = TV Do not accept: Increase frequency / time / duration (different components of FITT) = TV Do not accept: sprint for longer = TV (duration) Do not accept: change in terrain = TV (must show an increase in intensity)</p> <p>Accept: increase gradient or greater resistance from the ground, e.g. run in water / on sand. Accept: sprint for a faster time = BOD</p>
20		<p>One mark for:</p> <p>B</p>	<p>1 AO1</p>	

Section B					
Question			Answer	Marks	Guidance
21	(a)	(i)	One mark for: 2 OR Finley AND Li	1 AO3	
		(ii)	One mark for: Zayn	1 AO3	
		(iii)	One mark for: Finley	1 AO3	
		(iv)	One mark for: Cooper 12-minute run / walk (test)	1 AO1	Do not accept: multi-stage fitness test or bleep / beep test. Use REP Do not accept: Running round a track = TV Accept: 'Cooper test' 'Cooper run' and '12-minute run' as BODs Accept: Cooper 10-minute run (or other time) = BOD Accept: other suitable tests of stamina.
	(b)		Two marks for two of: 1. Lack of effort / motivation / drive OR trained at lower intensity OR trained less OR didn't train OR poor attitude / poor work ethic 2. (Unable to train) due to injury / illness / other commitments 3. Fitter players may make less improvement OR some players already have high (fitness) levels 4. Lack of (SMART) goals OR chose to focus on a different fitness component, e.g. strength 5. Errors made in data collection / recording of results	2 AO3	Do not accept: 'different playing positions' = TV Do not accept: different starting points / obese = TV Do not accept: stamina may be close to their best = TV Accept: opposite arguments for pt. 1, e.g. some put in more effort or 'different amounts of effort' = ✓ 1 Accept: 'injury' on its own = BOD 2 Two marks for: e.g. 'trained less hard due to injury' or 'didn't train due to injury' = ✓ ✓ 1 and 2

	(c)	<p>Four marks for:</p> <ol style="list-style-type: none"> 1. (Specificity) training should be relevant / suited / appropriate / targeted to (one of:) performer’s sport / performer’s needs / energy system used / muscle groups used / area of the body / fitness component / stroke 2. (example) targeting the main muscle groups in arms to improve front crawl OR training in the swimming pool OR focusing on front crawl because that is your event / race 3. (Progression) training should become gradually / slowly more demanding OR a gradual / slow increase in intensity 4. (example) Doing more repetitions of lengths in the pool OR increase number of (swimming) sessions per week 	<p>4</p> <p>2 x AO1</p> <p>2 x AO2</p>	<p>N.B. descriptions of training principles do not have to be applied to swimming, but the examples must be. N.B. mark can be given for example if the description of the principle is not credited</p> <p>Where there is repetition of the name of each principle, e.g. training must be specific to the sport or training must progress in difficulty, put REP above the word. The answer may still be credited if correct, e.g. ‘Meeting specific (REP) demands of the sport’ = ✓ 1</p> <p>Do not accept: gradually increase level = TV</p> <p>Do not accept: ‘do front crawl’ on its own = TV. For pt 2 answer must have some explanation to show why you might do front crawl.</p> <p>Do not accept: examples of specificity that say what you don’t do, e.g. ‘don’t do backstroke if you are a front crawl swimmer’ = TV</p> <p>Accept: target the area you want to improve = BOD 1</p> <p>Accept: focus on breaststroke leg kick = BOD 2</p> <p>Accept: Long / short distance swimmer doing long / short distance training = BOD 2</p> <p>Accept: swim for longer = BOD 4</p>
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<p>22</p>	<p>(a)</p>	<p>Four marks for:</p> <ol style="list-style-type: none"> 85 bpm at 10 minutes 110 bpm at 20 minutes 110 bpm at 30 minutes 80 bpm at 45 minutes OR 15 minutes after 3rd point plotted and at 80 bpm 	<p>4 AO3</p>	<p>N.B. If points are plotted correctly ignore any lines that may be drawn incorrectly.</p>  <p>Annotations must be close to each plotted point. Do not credit / annotate plotted point at 70 bpm.</p>
	<p>(b) (i)</p>	<p>Three marks for three of:</p> <ol style="list-style-type: none"> Increase in stroke volume OR more blood pumped out of the heart <u>per beat</u> Increase in cardiac output OR more blood pumped out of the heart <u>per minute</u> Increase in blood flow / oxygen transport / oxygen delivery Vascular shunt OR vasodilation of blood vessels to muscles OR vasoconstriction of blood vessels to other organs OR less blood to other organs Increase in blood pressure Increase in blood lactate / lactic acid / CO₂ OR decrease in blood pH Increase in blood temperature Blood vessels near skin dilate 	<p>3 AO2</p>	<p>N.B. short-term effects must be to cardiovascular system so blood is a key word in pts. 5-7. Use IRRL for references to other systems Do not accept: long-term adaptations to training = IRRL Do not accept: increase in heart rate (in question) use REP Do not accept: heart works harder = TV Do not accept: increase in (body) temperature = TV Do not accept: stronger blood flow = TV Do not accept: more gas exchange (respiratory or muscular system) = IRRL</p> <p>Accept: more deoxygenated blood to heart = BOD 3</p>

	(b) (ii)	<p>Three marks for three of:</p> <ol style="list-style-type: none"> Increase in tidal volume OR increased depth of breathing Increase in minute volume / minute ventilation Respiratory / intercostal / diaphragm muscles work harder / contract stronger / contract faster Increase in gaseous exchange / diffusion OR increase in concentration gradient OR more oxygen breathed in OR more carbon dioxide breathed out 	<p>3 AO2</p>	<p>Do not accept: increase in breathing rate or faster breathing or shortness of breath (in question) use REP Do not accept: references to other systems, e.g. more oxygen to working muscles (circulatory or muscular) = IRRL Do not accept: long-term adaptations to training, e.g. increase in lung capacity = IRRL Do not accept: lungs work harder = TV Do not accept: oxygen debt = TV Do not accept: fatigue in respiratory muscles = TV Accept: more air taken in or larger thoracic cavity = BOD 1 Accept: increase in respiratory muscle temperature = BOD 3</p>															
23	(a) (i)	<p>Two marks for two of:</p> <table border="1" data-bbox="309 818 1086 1198"> <thead> <tr> <th></th> <th>Aerobic (exercise)</th> <th>Anaerobic (exercise)</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Uses / requires oxygen OR no oxygen debt</td> <td>No / little / not enough oxygen used / required OR oxygen debt created</td> </tr> <tr> <td>2.</td> <td>Continuous exercise OR 3+ minutes</td> <td>Short bursts of exercise OR up to 30 seconds</td> </tr> <tr> <td>3.</td> <td>Low / moderate intensity</td> <td>High intensity</td> </tr> <tr> <td>4.</td> <td>No lactic acid produced OR CO₂ / H₂O produced</td> <td>Lactic acid produced</td> </tr> </tbody> </table>		Aerobic (exercise)	Anaerobic (exercise)	1.	Uses / requires oxygen OR no oxygen debt	No / little / not enough oxygen used / required OR oxygen debt created	2.	Continuous exercise OR 3+ minutes	Short bursts of exercise OR up to 30 seconds	3.	Low / moderate intensity	High intensity	4.	No lactic acid produced OR CO ₂ / H ₂ O produced	Lactic acid produced	<p>2 AO1</p>	<p>Each answer must show a difference by stating both sides of one point in the table Accept: aerobic is long/er duration AND anaerobic is short/er duration = BOD 2 Accept: aerobic is lower intensity AND anaerobic is higher intensity = BOD 3</p>
	Aerobic (exercise)	Anaerobic (exercise)																	
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3.	Low / moderate intensity	High intensity																	
4.	No lactic acid produced OR CO ₂ / H ₂ O produced	Lactic acid produced																	

		<p>(ii) Two marks for:</p> <p>1. (Aerobic event) 800m / 1500m / 3000m / 5000m / 5k(m) / 10000m / 10k(m) / steeplechase / race walking</p> <p>2. (Anaerobic event) 60m / 100m / 200m / 300m / 400m / hurdles / long jump / triple jump / high jump / pole vault / javelin / shot / discus / hammer</p>	<p>2</p> <p>AO2</p>	<p>Do not accept: distances between 401 – 799m = TV (50:50 aerobic: anaerobic)</p> <p>Do not accept: ‘sprint’ ‘sprinting’ ‘short distance running’ ‘walking’ on its own = TV</p> <p>Do not accept: long distance running / triathlon / parkrun / cycling / swimming / rowing or games activities = TV</p> <p>Do not accept: if units make the answer wrong, e.g. 800cm = X</p> <p>Accept: any correct distance given without metres, e.g. 1500 = BOD (but not 5 or 10 without kilometres / k)</p> <p>Accept: relay = ✓ 2</p> <p>Accept: 800m sprint / 1500m sprint = BOD 1</p> <p>Accept: mile / marathon / cross country = BOD 1</p> <p>Accept as aerobic: any distance 800m+ = BOD 1</p> <p>Accept as anaerobic: any distance 50 – 400m = BOD 2</p>
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Level 3 (5–6 marks)

- detailed knowledge & understanding
- clear and consistent practical application of knowledge & understanding
- effective analysis/evaluation and/or discussion/explanation/development
- relevant information drawn upon from other areas of the specification
- accurate use of technical and specialist vocabulary
- there is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.

Level 2 (3–4 marks)

- satisfactory knowledge & understanding
- some success in practical application of knowledge & understanding
- analysis/ evaluation and/or discussion/explanation/development attempted with some success
- some relevant information drawn upon from other areas of the specification
- technical and specialist vocabulary used with some accuracy
- there is a line of reasoning presented with some structure. The information presented is in the most-part relevant and supported by some evidence.

Level 1 (1–2 marks)

- basic knowledge & understanding
- little or no attempt at practical application of knowledge & understanding
- little or no attempt to analyse/ evaluate and/or discuss/explain/develop
- little or no relevant information drawn upon from other areas of the specification
- technical and specialist vocabulary used with limited success
- the information is basic and communicated in an unstructured way. The information is supported by limited evidence and the relationship to the evidence may not be clear.

(0 marks)

- no response or no response worthy of credit.

Level 3 Discriminators

- detailed knowledge & understanding of long-term benefits of exercise on the cardiovascular system and the emotional and social consequences of sedentary lifestyle
- long-term benefits of exercise on the cardiovascular system are explained
- different emotional and social consequences are described and supported with relevant practical examples
- all AOs are well covered for Level 3; some imbalance between them may be present for 5 marks. At 6 marks, both are equally well addressed

Level 2 Discriminators

- satisfactory knowledge & understanding of long-term benefits of exercise on the cardiovascular system and the emotional and social consequences of sedentary lifestyle
- some long-term benefits of exercise on the cardiovascular system may be explained and some may only be described
- some emotional and social consequences are described with some examples
- some success at more developed AO2 and/or AO3 points moves the response into Level 2 (AO2 or AO3 would be 3 marks; both attempted with some success = 4 marks)

Level 1 Discriminators

- basic knowledge & understanding long-term benefits of exercise on the cardiovascular system and the emotional and/or social consequences of sedentary lifestyle
- few emotional and social consequences described with few examples
- responses only demonstrating AO1 knowledge and understanding are Level 1

<p>Q23 (b)* Indicative content (6 marks - 2 x AO1, 2 x AO2, 2 x AO3)</p> <p>(long-term benefits of exercise on the cardiovascular system)</p> <ol style="list-style-type: none"> 1. Lower resting heart rate <ul style="list-style-type: none"> • Bradycardia • Heart doesn't need to work as hard / more efficient 2. Larger / stronger heart OR (cardiac) hypertrophy <ul style="list-style-type: none"> • Stronger contractions 3. Increase in stroke volume <ul style="list-style-type: none"> • At rest and high intensity • More blood pumped from the heart in one beat 4. Increase in maximum cardiac output <ul style="list-style-type: none"> • Higher volume of blood ejected from left ventricle in one minute during high intensity exercise 5. Capillarisation OR Increased capillary density <ul style="list-style-type: none"> • Improved circulation • Greater surface area for gaseous exchange OR more efficient / faster diffusion • More oxygen to muscles OR faster removal of CO₂ / lactic acid 6. More efficient vascular shunt mechanism <ul style="list-style-type: none"> • More blood to (working) muscles / body (credit once (DEV) in relation to any of pts. 2, 3, 4, 5 or 6) 7. Lower blood pressure <ul style="list-style-type: none"> • Less strain on the heart / blood vessels • Reduced risk of heart complications / strokes / heart attacks 8. Increase in red / white blood cells <ul style="list-style-type: none"> • (red) more haemoglobin / haemocrit • (red) Increased oxygen carrying capacity to supply working muscles • (white) better able to fight infections / disease 9. Increased plasma / blood volume <ul style="list-style-type: none"> • Decrease in blood viscosity • Blood flow is easier through blood vessels 10. Faster / shorter recovery rate <ul style="list-style-type: none"> • Heart rate returns to resting value faster after exercise • Performer will recover quicker from playing sport / training 	<p>AO1 = numbered points (KU), AO3 = bullet points (DEV), AO2 = E.g. (EG)</p> <p>Do not credit: increased cardiovascular endurance / stamina (tenuous link to question. Question is limited to benefits on CV system) Do not credit opposites, e.g. benefits of an active lifestyle. Use SEEN</p> <p>N.B. Physical health issues may lead to emotional / social consequences, e.g. obesity. These can be credited with EG if linked to an emotional / social consequence.</p> <p>(emotional consequences of a sedentary lifestyle)</p> <ol style="list-style-type: none"> 11. Poor mental health / depression / anxiety / wellbeing E.g. unable to benefit from release of endorphins / serotonin from exercise 12. Low self-esteem / confidence OR increased self-doubt E.g. No experience of success or competition OR feel unable to participate in sport 13. Poor self-image / body image E.g. due to being unfit / obese or overweight / lack of muscle tone 14. Poor stress management OR unable to relieve tension E.g. not playing sport to take mind of other stresses OR unable to channel aggression / frustration / relax / unwind / gain catharsis through exercise <p>(social consequences of a sedentary lifestyle)</p> <ol style="list-style-type: none"> 15. Loneliness OR isolation E.g. - Unable to make new friends with other members of a sports team / club 16. Feeling of not belonging to a group E.g. – Not a member of sports team / club 17. Lack of friendships OR no common experience (with others) E.g. – Unable to share sporting experiences / sporting success 18. Interests are inactive / do not support healthy lifestyle E.g. - Prefer own company / couch potato syndrome / watching TV / computer games OR copy friends who have sedentary lifestyles
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