CAMBRIDGE
International Education

Cambridge IGCSE™

PHYSICAL EDUCATION **0413/11**

Paper 1 Theory **May/June 2025**

MARK SCHEME

Maximum Mark: 100

Published

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge International will not enter into discussions about these mark schemes.

Cambridge International is publishing the mark schemes for the May/June 2025 series for most Cambridge IGCSE, Cambridge International A and AS Level components, and some Cambridge O Level components.

This document consists of **22** printed pages.

PUBLISHED

Generic Marking Principles

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptions for a question. Each question paper and mark scheme will also comply with these marking principles.

GENERIC MARKING PRINCIPLE 1:

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptors for the question
- the specific skills defined in the mark scheme or in the generic level descriptors for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

GENERIC MARKING PRINCIPLE 2:

Marks awarded are always **whole marks** (not half marks, or other fractions).

GENERIC MARKING PRINCIPLE 3:

Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

GENERIC MARKING PRINCIPLE 4:

Rules must be applied consistently, e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

GENERIC MARKING PRINCIPLE 5: Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).
GENERIC MARKING PRINCIPLE 6: Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

Science-Specific Marking Principles

1	Examiners should consider the context and scientific use of any keywords when awarding marks. Although keywords may be present, marks should not be awarded if the keywords are used incorrectly.
2	The examiner should not choose between contradictory statements given in the same question part, and credit should not be awarded for any correct statement that is contradicted within the same question part. Wrong science that is irrelevant to the question should be ignored.
3	Although spellings do not have to be correct, spellings of syllabus terms must allow for clear and unambiguous separation from other syllabus terms with which they may be confused (e.g. ethane / ethene, glucagon / glycogen, refraction / reflection).
4	The error carried forward (ecf) principle should be applied, where appropriate. If an incorrect answer is subsequently used in a scientifically correct way, the candidate should be awarded these subsequent marking points. Further guidance will be included in the mark scheme where necessary and any exceptions to this general principle will be noted.
5	<u>'List rule' guidance</u> For questions that require ***n*** responses (e.g. State **two** reasons …): • The response should be read as continuous prose, even when numbered answer spaces are provided. • Any response marked *ignore* in the mark scheme should not count towards ***n***. • Incorrect responses should not be awarded credit but will still count towards ***n***. • Read the entire response to check for any responses that contradict those that would otherwise be credited. Credit should **not** be awarded for any responses that are contradicted within the rest of the response. Where two responses contradict one another, this should be treated as a single incorrect response. • Non-contradictory responses after the first ***n*** responses may be ignored even if they include incorrect science.

6 Calculation specific guidance

Correct answers to calculations should be given full credit even if there is no working or incorrect working, **unless** the question states 'show your working'.

For questions in which the number of significant figures required is not stated, credit should be awarded for correct answers when rounded by the examiner to the number of significant figures given in the mark scheme. This may not apply to measured values.

For answers given in standard form (e.g. $a \times 10^n$) in which the convention of restricting the value of the coefficient (a) to a value between 1 and 10 is not followed, credit may still be awarded if the answer can be converted to the answer given in the mark scheme.

Unless a separate mark is given for a unit, a missing or incorrect unit will normally mean that the final calculation mark is not awarded. Exceptions to this general principle will be noted in the mark scheme.

7 Guidance for chemical equations

Multiples / fractions of coefficients used in chemical equations are acceptable unless stated otherwise in the mark scheme.

State symbols given in an equation should be ignored unless asked for in the question or stated otherwise in the mark scheme.

Annotations guidance for centres

Examiners use a system of annotations as a shorthand for communicating their marking decisions to one another. Examiners are trained during the standardisation process on how and when to use annotations. The purpose of annotations is to inform the standardisation and monitoring processes and guide the supervising examiners when they are checking the work of examiners within their team. The meaning of annotations and how they are used is specific to each component and is understood by all examiners who mark the component.

We publish annotations in our mark schemes to help centres understand the annotations they may see on copies of scripts. Note that there may not be a direct correlation between the number of annotations on a script and the mark awarded. Similarly, the use of an annotation may not be an indication of the quality of the response.

The annotations listed below were available to examiners marking this component in this series.

Annotations

Annotation	Meaning
	correct point or mark awarded
	incorrect point or mark not awarded
BOD	benefit of the doubt given
ECF	error carried forward applied
SEEN	point has been noted, but no credit has been given or blank page seen
TV	response is too vague or there is insufficient detail in response
	Incomplete answer
	linked consideration of points
	linked consideration of points

Annotation	Meaning
REP	repetition in response
^	information missing or insufficient for credit
CON	contradiction in response, mark not awarded

Question	Answer	Marks
1	1 mark for each function. 2 from: muscle attachment for movement; protection (of vital organs); (red) blood cell production;	**2**

Question	Answer	Marks
2(a)	1 mark for an appropriate component (2 marks max). 1 mark for an appropriate benefit (2 marks max). agility; benefit: to be able to change the angle / direction of the run up to the bar quickly; balance; benefit: to be able to jump upwards without losing control of the position of the body / without falling over; coordination; benefit: to be able to flick the legs while raising the arms at the same time to clear the bar; muscular endurance; benefit: to be able to perform repeated jumps throughout a competition without tiring; speed; benefit: to be able to accelerate towards the bar in the run up; strength; benefit: to be able to push off the ground to gain height in the jump; Accept alternative explanations.	**4**

Question	Answer	Marks
2(b)	1 mark for naming an appropriate test. 3 marks max. for the description. Test: Vertical Jump Test; subject adjusts vertical jump board so that the lower edge touches fingertips when arms are extended overhead and if body fully stretched with feet flat on the floor **OR** (if a vertical jump board is not available) subject stands sideways on to wall with feet flat and extends arm nearest wall upwards to make mark with chalk held in fingers; subject bends knees and jumps as high as possible; marking the board / wall at the highest point using chalk or equivalent method; measure the difference between the two marks; (the best score from 3 attempts is recorded and) compared to normative data tables;	**4**
2(c)(i)	1 mark for: fast twitch (muscle fibre);	**1**
2(c)(ii)	1 mark for each benefit. 2 from: produce large amounts of force; short period of time; anaerobic / can work without oxygen; contract quickly;	**2**

Question	Answer	Marks
2(d)	1 mark for each suggestion. 3 from: examples could include: 180–degree jump; broad jump; clap press up; box jump; depth jump; tuck jump; hurdle jumps; bounding; hopping exercises; Accept other appropriate examples.	**3**
2(e)	1 mark for each description. 3 from: high amount of stress on muscle / joints; (increases the possibility) of injury from falling off equipment; (increases the possibility) of injury; need to develop / have good technique before undertaking jumps; equipment needed for jumps; safe / soft landing areas needed; high number of rest days / recovery periods required; could be dangerous if used with untrained performers / young performers; should limit the use of this type of training / need high level of fitness; does not improve aerobic respiration; Accept other appropriate descriptions.	**3**

Question	Answer	Marks
3(a)	1 mark for each description (2 marks max. for bicep related answer / 2 marks max. for triceps related answer). the bicep muscle contracts / shortens / concentric contraction; the bicep works as the agonist; the bicep pulls the radius bone towards the shoulder; the triceps relaxes / lengthens; the triceps work as the antagonist;	**3**
3(b)	1 mark for: isometric (contraction);	**1**
3(c)	1 mark for a correctly named component. 1 mark for an appropriate function. synovial fluid; function: act as a lubricant / reduces friction / reduces wear and tear; OR synovial membrane; function: produces synovial fluid / surrounds the joint capsule with synovial fluid; OR joint capsule; function: protects the joint; OR ligament; function: holds the bones together / keeps the bones in place; OR cartilage; function: acts as a cushion to stop bones knocking together / acts as a shock absorber / protects the ends of bones;	**2**

Question	Answer	Marks
4	1 mark for each suggestion. Marks can be awarded 4 / 2, 3 / 3, 2 / 4 to gain full marks. provision (sub.max. 4) reduced price for older people; sports clubs / centres can adapt sports such as walking football / netball; increase the number of facilities / activities available; providing adapting equipment; create links with local sports clubs; meeting the needs of an older population / listen to the needs / interests of older people; support for older people at events; provide less competitive / physical demanding activities; ensure that activities have a social element to them; access (sub.max.4) provide free transport to make it easier to travel to facilities; ramps / parking spaces that give easier access to a facility; facilities on ground floor level to avoid stairs / have lifts to enable access to facilities not on the ground floor; greater links between health workers and sports providers; hold activities at more appropriate times for older people; Accept other appropriate suggestions.	**6**

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th></tr>
<tr><td>5(a)</td><td>1 mark for each correct response.

<table><tr><td></td><td>inhalation</td><td>exhalation</td></tr><tr><td>ribs</td><td>moves outwards AND upwards;</td><td>moves inwards AND downwards;</td></tr><tr><td>diaphragm</td><td>contracts AND becomes flatter;</td><td>relaxes AND domes / upwards;</td></tr></table></td><td>4</td></tr>
<tr><td>5(b)</td><td>1 mark for each correctly completed sentence.

The volume of air in the lungs increases; during inhalation.
The pressure of air in the lungs increases; causing exhalation.</td><td>2</td></tr>
<tr><td>5(c)</td><td>2 marks for:

residual volume;
vital capacity;</td><td>2</td></tr>
</table>

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th></tr>
<tr><td>6</td><td>1 mark for each feature.
3 from:

essential human needs are met;
friendship and support;
have value in society;
ability to mix with other people;

Accept alternative wording.</td><td>3</td></tr>
</table>

Question	Answer	Marks
7(a)	1 mark for each disadvantage suggested. 3 from: financial penalty / fines; loss of sponsorship; public humiliation / ruined reputation; disqualification / being banned; effect on other competitors / unfair advantage; loss of records / medals; Accept other appropriate suggestions.	**3**
7(b)(i)	1 mark for: cross country (distance running) / long distance (road) cycling / open water swimming; Accept other appropriate endurance activities.	**1**
7(b)(ii)	1 mark for: cardiovascular endurance increases / can perform for longer without fatigue;	**1**
7(b)(iii)	1 mark for: blood becomes more viscous (thicker) / increases chance of heart attack / stroke / pulmonary embolism / increases risk of infection / kidney disease / liver disease / high blood pressure;	**1**

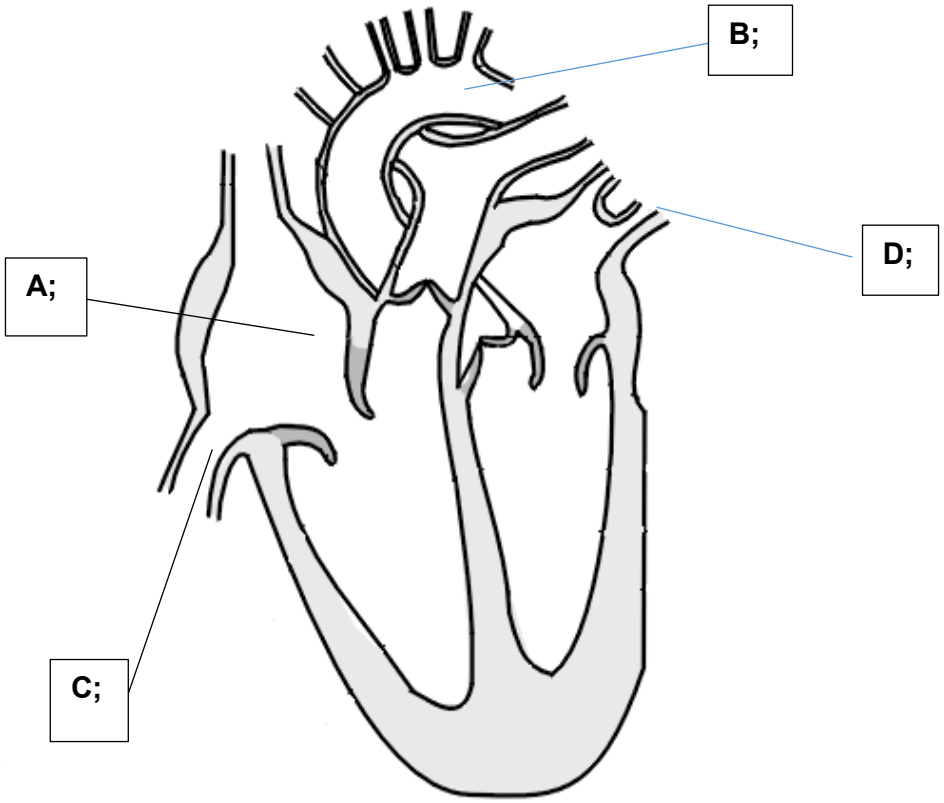
<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th></tr>
<tr><td>8</td><td>1 mark for each difference described.
3 marks from:

<table>
<tr><td>association football as a sport</td><td></td><td>association football as play</td></tr>
<tr><td>sport needs officials</td><td>AND</td><td>play does not have / need officials;</td></tr>
<tr><td>must have rules / sport has stringent rules</td><td>AND</td><td>play may have no rules / may have basic rules / rules can be made up by those who are playing;</td></tr>
<tr><td>sport has a high level of organisation / predetermined boundaries / numbers / time constraints / equipment</td><td>AND</td><td>play activities can be spontaneous / low level of organisation;</td></tr>
<tr><td>sport requires more exertion / play to a higher standard / large amounts of training required</td><td>AND</td><td>play is rarely at the same level of intensity / often at a low standard / no training;</td></tr>
<tr><td>sport is competitive / players play to win</td><td>AND</td><td>play is usually not serious / can be non-competitive;</td></tr>
<tr><td>sport can be a career / earn money</td><td>AND</td><td>play is done for health / fun / enjoyment / social reasons;</td></tr>
<tr><td>sport has specific tactics / strategies</td><td>AND</td><td>play may have no tactics / strategies;</td></tr>
</table>

Accept other appropriate differences.</td><td>3</td></tr>
</table>

Question	Answer	Marks
9(a)	1 mark for each force (3 marks max). 1 mark for explaining an appropriate effect of the force (3 marks max). gravity; effect: pulls the sprinter towards the ground as they drive out of the blocks / forces the sprinter's feet to return to the ground; muscular force; effect: the power the sprinter exerts to push himself out of the blocks quicker / continues to be applied through to the ground; air resistance; effect: the faster the sprinter accelerates there is greater air resistance which will slow the sprinter down / acts in opposite direction to motion to slow them down / acts against the runner to slow them down; ground reaction force; effect: the force from the ground to the sprinter that is equal and opposite to the action force / the harder the sprinter pushes the force downwards and backwards helps to move the sprinter upwards and forwards;	**6**
9(b)(i)	1 mark for: second class lever;	**1**
9(b)(ii)	1 mark for the correct position of resistance in the middle; 1 mark for the fulcrum and effort at each end; (fulcrum-resistance-effort / effort-resistance-fulcrum)	**2**

Question	Answer	Marks
10	1 mark for an appropriate activity. 1 mark for each justification (2 marks max). activities could include: long-distance running / road cycling / swimming / table tennis (singles); justification: are able to train on their own / like to be on their own; has no form of physical contact during a match; requires a high level of concentration and accuracy; low pain threshold; low levels of arousal; Accept other appropriate justifications.	**3**

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th></tr>
<tr><td>11(a)</td><td>1 mark for each feature correctly labelled.
 
</td><td>4</td></tr>
<tr><td>11(b)</td><td>1 mark for each correct blood vessel.
<table>
<tr><td>statement</td><td>blood vessel</td></tr>
<tr><td>walls are single cell in thickness</td><td>capillaries;</td></tr>
<tr><td>thick muscular walls</td><td>arteries;</td></tr>
</table></td><td>2</td></tr>
</table>

Question	Answer	Marks
11(c)	1 mark for describing each change to the heart. 2 from: heart size increases (hypertrophy); heart becomes stronger; reduce the possibility of heart disease; resting heart rate decreases (bradycardia); stroke volume increases; cardiac output increases;	**2**
11(d)	1 mark for each factor. age; level of fitness / type of training undertaken; genetics; diet / hydration; use of cool down techniques / use of recovery techniques e.g. ice baths; lifestyle choices; amount / quality of sleep; environmental conditions; amount of lactic acid;	**2**

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th></tr>
<tr><td>12(a)</td><td>1 mark for each correct food source (3 marks max).
1 mark for each benefit (3 marks max).

<table>
<tr><td>performer</td><td>nutrient</td><td>food source</td><td>benefit</td></tr>
<tr><td>cross- country runner</td><td>fats</td><td>red meats / butter / cooking oils / cheese / bacon;</td><td>long term energy supply;</td></tr>
<tr><td>shot putter</td><td>protein</td><td>low fat meat (chicken) / dairy / beans / eggs / fish / red meat;</td><td>Increase in muscle repair / muscle mass;</td></tr>
<tr><td>50 metre swimmer</td><td>carbohydrates</td><td>fruits / bread / grains / starchy vegetables / sugars / pasta / rice;</td><td>short term energy source;</td></tr>
</table>

Accept other appropriate food sources.</td><td>6</td></tr>
<tr><td>12(b)</td><td>1 mark for each correct answer.

prevents dehydration;
regulates body temperature / reduces the possibility of heat exhaustion;
assists in removing waste products;
carries nutrients to muscles;
delays fatigue;
maintains mental alertness during the race / improves decision making;
essential to aid recovery;
aids digestion;</td><td>3</td></tr>
</table>

Question	Answer	Marks
13(a)	1 mark for identifying an appropriate skill (2 marks max). 1 mark for each explanation (2 marks max). skills with low level of arousal could include: spin bowling in cricket / kicking a penalty in rugby / taking a free throw in basketball / shooting in netball / putting in golf; explanation: skills that have lower levels of arousal usually require high levels of precision / accuracy / concentration / control / need to remain calm; skills with high level of arousal could include: fast bowling in cricket / tackling in rugby / jumping to rebound the ball in basketball / driving the ball in golf; explanation: skills that have higher levels of arousal usually require strength / speed / power / are physically demanding;	**4**
13(b)	1 mark for each effect. 3 from: decrease in performance / increase in the number of errors; loss of control / increase in muscle tension / judgement becomes less effective; over aggressive; poor decision making / loss of concentration; greater levels of emotion; increase in reaction time; Accept other appropriate effects.	**3**

Question	Answer	Marks
13(c)	1 mark for a named relaxation technique. 1 mark for an appropriate description. visualisation; think through a time when performing well / being successful; OR mental rehearsal; think through the skills or tactics to be used in the game /match; OR deep breathing; a learnt way of controlled depth and speed of breathing; OR warm up; using familiar movements; Accept other appropriate techniques.	**2**

Question	Answer	Marks
14(a)	1 mark for the movement. extension;	1
14(b)	1 mark for each named bone. femur; tibia;	2
14(c)	1 mark for each description. joins muscle to bone; (hamstring) tendon pulls the tibia to create flexion; (quadricep) tendon pulls on the tibia to create extension; absorb some of the impact during movement;	2
14(d)	1 mark for each appropriate cause. 2 from: over extension / over-stretching / twisting movement at the joint; overtraining / over-use of the same joint / muscle group; high intensity of the activity / sudden movement / pushing too hard in an activity; impact with objects / falls / sudden stops; poor technique; lack of warm up; Accept other appropriate causes.	2
14(e)	1 mark for an appropriate benefit of each of the named stages. rest: prevent the injury from further damage; compression: helps to decrease swelling / reduce blood flow to the injured area / reduces pain / immobilise;	2