

Cambridge IGCSE™

PHYSICAL EDUCATION**0413/13**

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 **20** printed pages.

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 'List rule' guidance

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
	benefit of the doubt given
	error carried forward applied
	point has been noted, but no credit has been given or blank page seen
	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	2 marks for: (physical recreation) physical activity or pastime that promotes health / relaxation / enjoyment / non-competitive; (leisure time) time spent away from work / free from obligations; Accept alternative wording.	2

Question	Answer	Marks
2	3 marks for: physical (health and well-being); mental (health and well-being); social (health and well-being);	3

Question	Answer	Marks
3(a)	3 marks for: A trachea; B bronchus / bronchi; C alveolus / alveoli;	3
3(b)	1 mark for each breathing volume. 1 mark for each effect of exercise. (tidal volume) the volume / amount of air entering or leaving the lungs with each breath ; (effect of exercise) increase; (vital capacity) the maximum volume / amount of air that can be breathed out after breathing in as deeply as you can ; (effect of exercise) no change; (residual volume) the amount of air left in the lungs after breathing out as hard as possible ; (effect of exercise) no change;	6

Question	Answer	Marks
4(a)	3 marks for: (in order) elite; foundation; performance;	3

Question	Answer	Marks
4(b)	<p>1 mark for named factor. 1 mark for appropriate explanation.</p> <p>For example:</p> <p>discrimination; e.g., if the activity is traditionally a male dominated activity some clubs may not allow female members so lower female participation;</p> <p>education; e.g., positive experience of PE in school leads to increased participation out of school;</p> <p>environment / climate; e.g., if the person lives near the sea then there is an increased opportunity to participate in water sports / if a person lives where there is a lot of snow there is an increased opportunity to participate in winter sports;</p> <p>family; e.g., if family is interested in a certain sport then may increase participation levels of children;</p> <p>financial considerations; e.g., cost of equipment needed to participate is too high so participation decreases;</p> <p>media coverage; e.g., low coverage of minority sports can result in decreased number of participants;</p> <p>role models; e.g., seeing good role models may lead to increased participation;</p> <p>time and work commitments; e.g., people in full-time work have less time for activities so participation decreases;</p> <p>Accept other suitable explanations.</p>	6

Question	Answer	Marks
5(a)	<p>1 mark for describing a benefit of each component of fitness when playing rugby union.</p> <p>Examples of descriptions could include:</p> <p>(cardiovascular endurance / stamina) be able to move around the pitch effectively for 80 minutes / the whole game; (strength) be able to tackle an opponent / push an opponent away / kick or throw the ball hard / push in a scrum / jump high in a line-out to catch the ball; (coordination) be able to coordinate hand and eye to catch the ball / be able to run and pass the ball at the same time; (speed) be able to sprint past an opponent to score a try / be able to chase and tackle an opponent;</p> <p>Accept other appropriate descriptions.</p>	4
5(b)(i)	<p>2 marks for:</p> <p>the volume of oxygen that can be consumed / used while exercising at a maximum capacity OR the maximum volume of oxygen that can be consumed / used during exercise; per unit of time / measured in ml / kg / min;</p>	2
5(b)(ii)	<p>3 marks for:</p> <p>(gender) values of VO₂ max are typically higher in males due to the larger amount of blood pumped (higher stroke volume) / larger heart / larger lungs;</p> <p>(genetics) the types of muscle fibres you have and the size of the heart is partially due to the inherited characteristics;</p> <p>(lifestyle) smoking affects the condition of the lungs that reduces VO₂ max / a sedentary lifestyle will prevent VO₂ max from improving / poor diet may lead to excess weight so decreases VO₂ max;</p>	3

Question	Answer	Marks
5(c)	<p>1 mark for naming the test. 1 mark for each part of a description of the test (3 marks max)</p> <p>Multi-Stage Fitness Test; performer must run in time with the bleeps on a CD / recording; 20-metre / measured shuttles are performed; time between bleeps reduces as test progresses / bleeps get closer together / the subject must run faster; subject runs until they can no longer keep up with the bleeps; the level achieved and the number of shuttles performed within the level are recorded; scores are compared to standardised normative data;</p> <p>OR</p> <p>12-Minute Cooper Run Test; subject runs / walks as far as possible; test duration is 12 minutes; a measured course is used, e.g. with cones placed at regular intervals to help identify the exact distance covered / measured laps; calculate the distance covered; the distance covered is compared to standardised normative data;</p> <p>Accept other standardised tests</p>	4

Question	Answer	Marks
6(a)	<p>1 mark for correctly explaining how each principle could be applied to a named physical activity.</p> <p>for example in swimming: (specificity) training should include (pool work to) work on particular strokes / particular techniques / weight training to improve muscular strength / endurance / flexibility training to focus on mobility at the shoulders and hips;</p> <p>(progression) ensure the programme starts easy and becomes more difficult, for example increase the distance covered each week;</p> <p>(overload) increase the number of lengths completed in a session / increase the number of lengths completed in a session every month / increase the weights used if using weight training as part of the programme;</p> <p>(reversibility) when on holiday / when injured the swimmer may use a limited / shorter training session to reduce the loss of fitness;</p> <p>(tedium) ensure there is a mix of training activities to prevent boredom / due to the nature of swimming training boredom is a factor, e.g. use stretching activities on land / other land-based activities to improve the range of movement in the hip and shoulders / maintain interest;</p>	5
6(b)	<p>2 marks from:</p> <p>muscle soreness; sleep problems / insomnia; overuse injuries; plateau / reduced performance; fatigue; depression; demotivation; increased illness;</p> <p>Accept other appropriate suggestions.</p>	2

Question	Answer	Marks
7(a)	<p>2 marks from:</p> <p>basic AND complex; fine AND gross;</p> <p>Accept other appropriate continua.</p>	2
7(b)	<p>1 mark for each skill identified. 1 mark for each justification.</p> <p>For example in tennis:</p> <p>(open skill) forehand drive when returning an opponent's shot; (justification) you need to take into account the speed and direction of the ball / position of opponent / may need to adapt the forehand shot / may be affected by the environment;</p> <p>(closed skill) serve; (justification) the skill has the same action each time / the serve takes place from the same position / net height is always the same / court size is the same / serve is not affected by the environment;</p>	4

Question	Answer	Marks
8(a)	<p>5 marks for:</p> <p>hinge (joint); flexion; dorsiflexion; quadriceps (group); eccentric;</p>	5
8(b)	<p>1 mark for naming each component of a joint. (3 marks max.) 1 mark for each description of a different function of each named component. (3 marks max.)</p> <p>synovial membrane; surrounds the joint capsule / produces synovial fluid / lines the cavity of the joint / encloses the joint;</p> <p>synovial fluid; acts as a lubricant / allows smooth movement / reduces wear / reduces friction / absorbs shock;</p> <p>ligament; holds the bones together / keep bones in place;</p> <p>cartilage; stops the bones knocking together / acts as a shock absorber / cushion / reduces friction;</p> <p>Accept other suitable components and appropriate descriptions of functions.</p>	6

Question	Answer	Marks
9(a)	<p>1 mark for each appropriate type of PED. 1 mark for each explanation.</p> <p>(golf) type of PED: beta blockers; players will be calm so do not rush movements / be more accurate / will make the putt;</p> <p>(sprinter) type of PED: stimulants; more alert / faster reaction time so respond quicker to the starting gun / make a faster start;</p> <p>(shot putter) type of PED: (anabolic) steroids; increases muscle size / strength so throw the shot further;</p> <p>Accept other appropriate explanations.</p>	6
9(b)	<p>3 marks from:</p> <p>health implications; financial penalty / fine; public humiliation / damage reputation; ban / suspension / disqualification; effect on other performers / unfair advantage; loss of sponsorship; loss of records / medal;</p> <p>Accept other appropriate suggestions.</p>	3

Question	Answer	Marks
10(a)	<p>2 marks for:</p> <p>(A) (level of) performance; (B) (level of) arousal;</p>	2
10(b)	<p>3 marks for:</p> <p>(X) underarousal; (Y) optimal arousal; (Z) overarousal;</p>	3
10(c)	<p>No mark for naming activity. 1 mark for each explanation and example.</p> <p>for example in hockey:</p> <p>(X: underarousal) performer bored and lacking interest so performance lacks concentration / effort / energy / mistakes are made AND e.g. hockey player does not chase back when beaten by an opponent;</p> <p>(Y: optimal arousal) performer has good levels of awareness / reaction times are good / makes considered judgements and decisions / performs at the highest levels AND e.g. hockey player can react quickly to stop a ball hit towards them from a short distance away;</p> <p>(Z: overarousal) become too aggressive causing possible injuries to themselves and others / poor decision making so a performer may not follow the routine that they have trained as they have lost concentration / reaction time can be reduced as the performer has too much muscle tension / the performer has greater / levels of emotion AND e.g. player is more likely to dispute decisions such as arguing with an umpire in hockey;</p>	3

Question	Answer	Marks
11(a)	<p>3 marks for:</p> <p>financial support; clothing / footwear / equipment; provision of (specialist) facilities;</p>	3
11(b)	<p>1 mark for each disadvantage described.</p> <p>(performer / team) increased pressure to perform / has to wear specific kit / use equipment provided by the sponsor which maybe of low quality / sponsorship can be withdrawn at any time / corporate demands takes away from training time / can result in deviant behaviour due to the pressure of success / may have to advertise a product that they do not like / sponsor may have too much control over the performer;</p> <p>(sponsor) uncertain investment / risk as sporting success is not guaranteed / if the event is disrupted, media exposure and advertising potential are lost / if the sport or performers cause bad publicity, this reflects badly on the sponsor / smaller sponsors may struggle to compete with larger brands / may be too expensive / unsuitable sponsor, e.g. tobacco company;</p> <p>(sport / event) sponsorship can be limited or easily withdrawn / some sponsorship, e.g. alcohol may give a bad image to sport / event / events can be manipulated or exploited to suit the sponsor, e.g. change of rules / change of time / difficulty of minority sports or those with little media coverage to attract sponsorship;</p> <p>(audience / spectators) over exposure by the sponsor can lead to loss of interest in the sport and lower participation / increase advertisements during a game disrupts viewing / reduced spectators as cheaper to watch from home;</p> <p>Accept other appropriate disadvantages.</p>	4

Question	Answer	Marks																		
12(a)(i)	<p>1 mark for each appropriate type of respiration. 1 mark for each justification.</p> <p>(A) anaerobic; (justification) high intensity / short duration; (B) aerobic; (justification) low intensity / long duration;</p>	4																		
12(a)(ii)	<p>2 marks for:</p> <p>(A) fast twitch; (B) slow twitch;</p>	2																		
12(a)(iii)	<p>2 marks from:</p> <table border="1" data-bbox="343 716 1730 1176"> <thead> <tr> <th data-bbox="343 716 983 779">slow twitch muscle fibre</th><th data-bbox="983 716 1095 779"></th><th data-bbox="1095 716 1730 779">fast twitch muscle fibre</th></tr> </thead> <tbody> <tr> <td data-bbox="343 779 983 843">contracts slowly</td><td data-bbox="983 779 1095 843">AND</td><td data-bbox="1095 779 1730 843">contracts quickly;</td></tr> <tr> <td data-bbox="343 843 983 906">produces little force</td><td data-bbox="983 843 1095 906">AND</td><td data-bbox="1095 843 1730 906">produces large force;</td></tr> <tr> <td data-bbox="343 906 983 1002">high fatigue tolerance / do not tire quickly / long period of time</td><td data-bbox="983 906 1095 1002">AND</td><td data-bbox="1095 906 1730 1002">low fatigue tolerance / tire quickly / short period of time;</td></tr> <tr> <td data-bbox="343 1002 983 1065">good for endurance</td><td data-bbox="983 1002 1095 1065">AND</td><td data-bbox="1095 1002 1730 1065">good for strength / power / speed;</td></tr> <tr> <td data-bbox="343 1065 983 1160">red in colour (because has good blood supply)</td><td data-bbox="983 1065 1095 1160">AND</td><td data-bbox="1095 1065 1730 1160">white in colour (because has poor blood supply);</td></tr> </tbody> </table> <p>Answers must relate to fibre type.</p>	slow twitch muscle fibre		fast twitch muscle fibre	contracts slowly	AND	contracts quickly;	produces little force	AND	produces large force;	high fatigue tolerance / do not tire quickly / long period of time	AND	low fatigue tolerance / tire quickly / short period of time;	good for endurance	AND	good for strength / power / speed;	red in colour (because has good blood supply)	AND	white in colour (because has poor blood supply);	2
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Question	Answer	Marks
12(b)	<p>1 mark for each injury suggested. (2 marks max) 1 mark for each appropriate treatment. (2 marks max)</p> <p>For example:</p> <p>(A) muscle strain / tear; tendon strain / tear (rotator cuff in shoulder); joint sprain / ligament sprain / tear; tear to cartilage; dislocation; overuse injury;</p> <p>(B) muscle strain / tear; tendon strain / tear (patellar tendon in knee); joint sprain / ligament sprain / tear; tear to cartilage; dislocation; overuse injury (shin splints); blisters; cut / graze;</p> <p>(treatments) rest / stop activity; ice / apply ice to injured area; compression / wrap injured area with bandage; elevation / raise injured area above level of the heart;</p> <p>dislocation: get medical assistance; blisters: clean / rest / protect with a plaster; cut / graze: clean / protect with a plaster;</p>	4

Question	Answer	Marks
12(c)	<p>4 marks from:</p> <p>protective clothing / equipment; appropriate clothing / footwear; lifting and carrying equipment safely; check equipment before use; appropriate supervision; maintaining hydration; following rules; suitable level of competition; use of correct technique; avoid overtraining; remove jewellery / tie long hair up; appropriate training intensity; carry out a risk assessment;</p> <p>Accept other appropriate strategies.</p>	4