CAMBRIDGE
International Education

Cambridge IGCSE™

PHYSICAL EDUCATION **0413/01**

Paper 1 Theory **For examination from 2029**

MARK SCHEME

Maximum Mark: 70

Specimen

This document has **12** pages.

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[Turn over

General Marking Principles

All examiners must apply these marking principles when marking candidate responses.

1	Examiners must award marks for each response in line with: • the specific **content** defined in the mark scheme • the specific **skills** defined in the mark scheme or in the level descriptions • the **standard of response** required as exemplified by the standardisation scripts.
2	Examiners must award **whole marks** (not half marks, or other fractions).
3	Examiners must award marks **positively**. This means that: • marks are not deducted for errors or omissions • marks are awarded for correct/valid answers as defined in the mark scheme and also for **other valid answers** which go beyond the scope of the syllabus and mark scheme referring to your team leader as appropriate • the quality of spelling, punctuation and grammar are judged **only** when the mark scheme indicates that these features are **specifically assessed** in the question. However, the meaning of all responses must be unambiguous.
4	Examiners must **consistently** apply the requirements of the mark scheme and any rules for what to do when candidates have not followed instructions correctly.
5	Examiners must use the **full range of marks** defined in the mark scheme, unless limited by the quality of the candidate responses seen.
6	Examiners must award marks according to the mark scheme and **must not** award marks with grade thresholds or grade descriptions 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).

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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.

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Question	Answer	Marks
1	recorded; realistic;	**2**

Question	Answer	Marks
2(a)	(anxiety) in all situations; Accept other appropriate descriptions.	**1**
2(b)	1 mark for description of cognitive aspect. Second mark for use of appropriate example in correct context. For example: fear / worry / nervousness about a specific situation; e.g. that they will miss the penalty kick / that they will get a bad start from the blocks at the start of a race; Accept other appropriate examples.	**2**

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Question	Answer	Marks
3	1 mark for naming each component of fitness (3 marks max.) 1 mark for an appropriate explanation of each benefit of the named component (3 marks max.) agility; can play a ball that has gone behind them because they are able to change direction quickly; balance; be able to stay on their feet during a rally because they are largely able to maintain their centre of mass over the base of support; coordination; be able to see the ball and swing the racket because they are able to use two or more body parts at the same time; flexibility; can reach a ball that is far away from the body because they have a large range of movement at the shoulder; muscular endurance; be able to play in a long rally because they can contract muscles in the racket arm repeatedly without tiring; power; be able to hit the ball hard so it reaches the back of the court because they can generate large forces quickly in the racket arm; reaction time; be able to hit a ball that is travelling at speed towards them because they can respond to the stimulus quickly; speed; be able to move from one part of the court to another quickly because they can cover a distance in a short time; Accept other appropriate explanations.	**6**

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Question	Answer	Marks
4(a)	(A) gastrocnemius; (B) quadriceps; (D) tibialis anterior;	**3**
4(b)	hinge;	**1**
4(c)	2 marks for correct explanation. muscle A / gastrocnemius **AND** agonist **AND** contracts / shortens; muscle D / tibialis anterior **AND** antagonist **AND** relaxes / lengthens;	**2**

Question	Answer	Marks
5		**5**

physical activity	type of PED	main effect on a performer	benefit to performance in physical activity
boxing			
shot put			be able to throw the shot further;
sprinting	stimulants;		have a faster reaction to the gun / have a faster start;
golf		reduce anxiety / heart rate;	
rugby	narcotic analgesics;		

Question	Answer	Marks
6(a)(i)	glucose + oxygen → carbon dioxide + water;	**1**
6(a)(ii)	the race lasts for a long duration / the race is run over a long distance; most of the race is run at a low intensity;	**2**
6(b)	2 marks from: increase in breathing rate; increase in tidal volume; increase in minute ventilation;	**2**

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Question	Answer	Marks
6(c)(i)	(residual volume) D; (tidal volume) A; (inspiratory reserve volume) B; (expiratory reserve volume) C;	**4**
6(c)(ii)	maximum volume of air a person can expire from the lungs after a maximum inspiration / the sum of inspiratory reserve volume, tidal volume and expiratory reserve volume;	**1**

Question	Answer	Marks
7	1 mark for each appropriate force identified (3 marks max.) 1 mark for each description of how the named force acts (3 marks max.) gravitational force / weight; pulls the sprinter downwards / towards the ground; air resistance; slows the sprinter down / opposes the movements of the sprinter / acts against the direction of the movement of the sprinter; muscular force; leg muscles generate force to propel the sprinter forwards / upwards; ground reaction force; as the sprinter pushes against the ground, the ground pushes back against the sprinter moving them forwards / upwards; friction; contact between shoes and track improves grip when running; Accept other appropriate descriptions.	**6**

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Question	Answer	Marks
8(a)	1 mark for a benefit to mental health and well-being. 1 mark for a benefit to social health and well-being. (mental) reduces stress / helps to cope with stress / anxiety / improves self-esteem; (social) increases opportunities for friendships / contributes positively to society / helps to adapt to different social situations;	**2**
8(b)	3 marks from: an increased risk of coronary heart disease; an increased risk of osteoporosis; an increased risk of type 2 diabetes; an increased risk of bad posture;	**3**

Question	Answer	Marks
9(a)	1 mark for each main type of sponsorship (2 marks max.) 1 mark for how each main stated type of sponsorship may be provided (2 marks max.) clothing; all officials are provided with a branded uniform; equipment; timing equipment / balls / athletics throwing equipment are provided by a particular brand; non-sporting products; drinks / catering franchises / event merchandise / event transportation are provided by specific companies; naming rights; event facilities / stadiums may be named after a particular sponsor; specialist facilities; purpose-built gym / new swimming pools are built by specific companies; Accept other appropriate ways that main types of sponsorship may be provided.	**4**

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Question	Answer	Marks
9(b)	1 mark for each main type of media coverage (2 marks max.) 1 mark for each different relevant description of benefit (2 marks max.) Descriptions of benefits must be different for credit. 2 marks from: broadcast media; digital media; print media; 2 marks from: For example: (broadcast media) can watch / listen to games live or on-demand / can watch highlights / can watch replays; (digital media) provide articles related to the event / provide interactive content related to the event; (print media) provide sports news (after the event) / interviews / analysis / feature stories; Accept other relevant descriptions.	**4**

Question	Answer	Marks
10	(A) cervical; (B) lumbar; (C) coccyx;	**3**

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Question	Answer	Marks
11(a)	3 marks from: weakened immune system; chronic fatigue; hormonal imbalance; insomnia; demotivation; Accept other appropriate responses.	**3**
11(b)(i)	3 marks from: typically uses aerobic exercise e.g. running, swimming, cycling or rowing; at a steady pace; without rest;	**3**
11(b)(ii)	60% to 80% of maximal heart rate;	**1**
11(c)	3 marks from: increases range of movement at the joints; increases speed of muscle contraction; increases oxygenated blood to working muscles; improves psychological preparation; practises techniques to be used; Accept other appropriate responses.	**3**

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Question	Answer	Marks
12(a)	For example: (accurate) the performer is able to hit the tennis ball exactly where they intend it to go to; (efficient) able to move around the tennis court / play a shot with appropriate energy expenditure; Accept other appropriate descriptions.	**2**
12(b)	1 mark for each reason. Reasons must be different for credit. For example: (extrinsic feedback) performers cannot use intrinsic feedback / cannot adjust their performance / coaches can make beginners aware of basic skills / techniques / can motivate a performer / reinforce the skills being learnt / correct mistakes in the performance / identify strengths and weaknesses / feedback can be specific to a skill / can set targets / goals / ensures inexperienced performers have / understand a way forward / extrinsic feedback will often come from qualified coaches so quality of feedback should be good; (knowledge of results) does not require a coach to be present / feedback is immediate / feedback should be accurate as it is objective / it can be easy for performers to set themselves targets / easy to show improvements / reinforce the skills learnt / if successful can be highly motivational; Accept other appropriate reasons.	**2**

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Question	Answer	Marks
12(c)	1 mark for placement. 1 mark for relevant justification. (placement) internally paced; For example: (justification) the serve is controlled by the performer / performer decides when to serve / performer controls the speed of the serving action; **OR** (placement) externally paced; For example: (justification) the performer must serve within a set time / before the shot clock has reached zero;	**2**

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