CAMBRIDGE
International Education

Cambridge IGCSE™

PHYSICAL EDUCATION **0413/12**

Paper 1 Theory **October/November 2024**

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 October/November 2024 series for most Cambridge IGCSE, Cambridge International A and AS Level components, and some Cambridge O Level components.

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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.

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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.

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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(a)	1 mark for: the ability to cope with (or meet) the demands of the environment;	**1**
1(b)	3 marks of any 3 of: suitability of performers for different physical activities; monitoring improvement / progression / check for reversibility; able to make comparison to others / enables a coach to know when a performer is able to take part / inform positional choices / are they fit enough?; informing the design of a training programme / set targets / goals; (test as a source of) motivation;	**3**

Question	Answer	Marks
2(a)	1 mark for: level of mental excitement and alertness / the state of being excited, keen and mentally and physically ready to perform a task; Accept alternative wording.	**1**
2(b)(i)	1 mark for shape of graph. 1 mark for each axis labelled (max. 2 marks). inverted-U shape; (*y*-axis) performance; (*x*-axis) arousal;	**3**
2(b)(ii)	1 mark for: Inverted-U (theory);	**1**

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Question	Answer	Marks
2(c)	1 mark for each explanation that is appropriate to the skill in an appropriate physical activity. for example, passing a ball in netball: (underarousal) can cause the player to lack focus / determination **AND** result in making a weak / slow pass which is easily intercepted; (optimal arousal) gives the player the right amount of drive / focus **AND** makes an accurate pass; (overarousal) increased aggression / overconfident **AND** causes the player to pass the ball too hard / fast which is difficult to control;	**3**

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Question	Answer	Marks
3(a)(i)	1 mark for each component of fitness (max. 3 marks). 1 mark for each explanation (max. 3 marks). examples of explanations could include: agility; able to change direction quickly to be able to return a shot when it is played with speed; balance; being able to remain in control of movement without falling over when reaching for a shot; cardiovascular endurance / stamina; rallies can last a number of shots and force the performer to move around the table in short sprints / performers may have to play a number of long rallies; flexibility; being able to stretch to reach a ball when it is dropping off the table; muscular endurance; being able to perform a shot repeatedly without tiring; power; being able to smash the ball to win a point or move your opponent away from the table; reaction time; the ball can be played at high speed so a performer has to be able to respond to a ball returned at speed; speed; when hitting the ball the performer needs to generate hand / arm speed to create speed on the ball; strength; being able to hit the ball hard so opponent cannot return it; Accept other appropriate explanations.	**6**

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Question	Answer	Marks
3(a)(ii)	1 mark for naming the test. 3 marks for description of the test. Anderson Wall Toss Coordination Test; subject stands 2 metres from a plain wall; with a tennis ball in their (right) hand, ball is thrown underarm to rebound off the wall and is caught in the left hand / the ball is then thrown underarm with the left hand to be caught by the right; this is then repeated as many times as possible **OR** the number of catches made in 30 seconds; compared to normative data tables; Accept other appropriate tests of coordination.	**4**
3(b)	1 mark for naming each stage. pulse raiser; stretches; familiarisation / skill-related activities;	**3**

Question	Answer	Marks
4(a)	3 marks for: (level 3) performance; (level 2) participation; (level 1) foundation;	**3**
4(b)	3 marks for any 3 of: beginners / new to the sport / young people / school age; take part in mass participation activities / largest number of performers; participating for fun / recreation / enjoyment / not competitive; learning / developing basic skills / rules; take part in physical education lessons / 'mini sports' activities; Accept other appropriate characteristics.	**3**

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<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th></tr>
<tr><td>5(a)</td><td>
<table>
<tr><td>A</td><td></td><td>produces synovial fluid / lines the cavity of the joint / encloses the joint;</td></tr>
<tr><td>B</td><td>cartilage;</td><td>stops the bones knocking together / acts as a shock absorber / cushion / reduces friction;</td></tr>
<tr><td>C</td><td>synovial fluid;</td><td></td></tr>
<tr><td>D</td><td></td><td>holds the bones together / keep bones in place / stabilise the joint;</td></tr>
</table>
1 mark for each answer. Functions must be different.
</td><td>5</td></tr>
<tr><td>5(b)</td><td>2 marks for:

flexion;
extension;</td><td>2</td></tr>
<tr><td>5(c)</td><td>1 mark for range of movement.
1 mark for stability.

(range of movement)
hip has a greater range of movement than the knee;
both knee and hip allow extension / flexion;
only hip allows adduction / abduction / rotation / circumduction;

(stability)
hip is less stable than the knee;</td><td>2</td></tr>
</table>

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Question	Answer	Marks
6	1 mark for each named factor (4 marks max.). 1 mark for each explanation relevant to football (4 marks max.). discrimination; treating people differently (negatively or positively) due to gender / race / ability means some people may be prevented from / encouraged to play football / generally more opportunities for males; education; what activities a school offers, e.g. if they do not offer football, then participation will be low / examination years reduce participation because focussing on academic work / if have a good experience of physical education it will increase participation; environment / climate; may not have appropriate areas to be able to play football, e.g. too hilly so lower participation / may be too hot or cold for football so participation is lower; family; if parents play football, may be more likely to play / family support, e.g. transport to training or matches may increase participation; financial considerations; club membership may limit participation of people with lower income; media coverage; large focus on football so may increase interest and participation / mainly be male-dominated so may reduce female participation; role models; football role models may inspire people to participate / lack of female role models may put people off from participating; time / work commitments; full-time work / looking after children / full-time education may limit participation; Accept other relevant factors and alternative explanations.	**8**

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Question	Answer	Marks
7(a)	5 marks for: A vena cava; B right atrium; C pulmonary artery; D valve; E left ventricle;	**5**
7(b)(i)	1 mark for value: 0.07 / 70; 1 mark for appropriate unit for correct value: litres / millilitres; Accept other units if appropriate.	**2**
7(b)(ii)	1 mark for: stroke volume increases / stroke volume gets bigger / more blood pumped per beat of the heart;	**1**

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Question	Answer	Marks
8(a)	Physical activity must be appropriate. 1 mark for each type of guidance. 1 mark for each relevant description. for example in gymnastics: visual; coach may demonstrate a handstand (to enable the skill to be seen) / coach may display posters of elite gymnasts performing a somersault / coach may show a video of a cartwheel (to be able to analyse performance of a cartwheel and determine areas to improve) / coach may use targets on the floor to help 'spot' the landing from a vault; verbal; coach may give instructions to the gymnast about how to perform a forward roll / coach may remind the gymnast of their floor routine beforehand / a coach may use questioning to assess the level of understanding of a forward roll / a coach may provide accurate descriptions of a forward roll; manual; a coach may adjust the physical position of a gymnast, e.g. hold the gymnast's legs straight in a handstand / a coach may help a gymnast to develop a feeling of the movement during a cartwheel, e.g. by supporting the gymnast's hips; mechanical; a coach may use a harness to reduce the danger when performing a somersault; Accept other examples of each type of guidance.	**6**
8(b)	2 marks for any 2 of: can be motivating; quick and effective / can be given immediately; learners can see an accurate performance / receive good instructions; demonstrations can be repeated; increases confidence; gives a feel for the skill; increases safety for the performer; increases understanding of the skill; may increase rate of learning; Accept alternative benefits.	**2**

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Question	Answer	Marks
9(a)	1 mark for each different type of PED and 1 mark for each appropriate justification, for example: (javelin) anabolic steroids; to increase muscle mass / strength so able to throw further; beta blockers; to reduce arousal before throwing; (judo) diuretics; to lose weight to get into lower weight category / to mask use of other drugs; anabolic steroids; to increase muscle mass / strength so able to throw opponent / resist opponent's attack; stimulants; to react faster to opponent's attack; (swimming) stimulants; to have a faster reaction to the starting signal; anabolic steroids; to increase muscle mass / strength so able to push off the blocks further / swim faster; beta blockers; to stay calm at the start of the race; diuretics; to lose excess weight before competition / to mask use of other drugs;	**8**

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Question	Answer	Marks
9(a)	(golf) beta blockers; to stay calm when making an important putt; anabolic steroids; to increase muscle mass / strength so can hit the ball further; Accept other appropriate types of PED and appropriate justifications.	
9(b)	3 marks from: increased health risks; ruined reputation; monetary fines / financial penalty; disqualification from event / loss of medals / records; (long-term) ban from sport; loss of sponsorship; Accept other disadvantages.	**3**

Question	Answer	Marks
10	1 mark for each different function, for example: (carbohydrates) provides a source of energy; (fats) provides insulation / source of energy / provides vitamins; (proteins) for growth / repair / source of energy; Accept other relevant functions. Must be different for credit.	**3**

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Question	Answer	Marks
11(a)	1 mark for: power;	**1**
11(b)(i)	2 marks for: (hip) extension; (shoulder) flexion;	**2**
11(b)(ii)	2 marks for: (agonist) gluteal(s); (antagonist) hip flexor(s); Accept other suitable muscles.	**2**
11(b)(iii)	2 marks for: concentric; muscle shortens during contraction;	**2**

Question	Answer	Marks
12	1 mark for each relaxation technique named. 1 mark for each description. mental rehearsal; running through a skill / sequence / event in your mind (in detail); visualisation; picturing in your mind the best positive outcome for the skill / technique you are about to perform; Accept other appropriate examples, e.g. positive self-talk; praising yourself for each successful performance;	**4**

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Question	Answer	Marks
13	1 mark for each explanation of a benefit, for example: (stadia and training facilities) new stadia and training facilities are built so after the games they can host further events / can be used for community use; (home advantage) host nation is familiar with facilities / used to environment, e.g. heat / humidity / increased support from fans / less need for a lot of travelling so avoids jet-lag or reduce costs / may receive automatic qualification to sporting events; (increase in national pride) gives feel-good factor for the host country / may raise profile of a country's performers; (improved tourism) an increase in visitors to the country will bring in additional money to the country / some tourists may revisit the country / the host may become well known for future visits / increased business opportunities; (increased employment) may be more employment from building facilities / during the event in the hospitality / tourist industry; (legacy implications) some facilities may be left for future use / may cause interest in sports that is built on for future generations / increase in participation levels / greater awareness of sport etc.; (infrastructure) improvements in road / rail / hotels / communication systems that may be available for the host community after the event; (redevelopment) some areas may be redeveloped by providing new housing and social facilities depending on the event;	**5**

Question	Answer	Marks
14(a)	1 mark for each explanation. (large surface area) lots of oxygen / carbon dioxide can diffuse at the same time; (walls with a thickness of one cell) less distance so diffusion of oxygen and carbon dioxide through alveoli wall is faster; Accept alternative wording.	**2**

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Question	Answer	Marks
14(b)	1 mark for each respiratory muscle named. 1 mark for each relevant description. diaphragm; becomes flatter / moves downwards; (external) intercostal muscles; lifts the rib cage upwards / outwards;	**4**

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