



# Cambridge International AS & A Level

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**PHYSICAL EDUCATION**

**9396/12**

Paper 1

**October/November 2021**

MARK SCHEME

Maximum Mark: 90

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**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 2021 series for most Cambridge IGCSE™, Cambridge International A and AS Level components and some Cambridge O Level components.

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This document consists of **15** 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 descriptors 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.

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<b>Question</b>	<b>Answer</b>	<b>Marks</b>
1(a)	3 marks for:  Must include example at the hip for credit.  1 (flexion) description of movement at hip where the joint angle between leg and torso decreases; 2 (abduction) description of movement at hip where leg is moved away sideways from mid-line of the body; 3 (rotation) description of movement at hip where leg turns / pivots / revolves around its long axis;	<b>3</b>
1(b)(i)	5 marks for:  1 flexion; 2 deltoid; 3 concentric / isotonic; 4 plantar flexion; 5 gastrocnemius / soleus;	<b>5</b>
1(b)(ii)	4 marks for any 4 of:  1 large motor neurone size; 2 large muscle fibre <b>diameter</b> ; 3 low resistance to <b>fatigue</b> ; 4 low numbers of mitochondria; 5 low capillary density; 6 low oxidative / aerobic <b>capacity OR</b> high anaerobic <b>capacity</b> ; 7 low myoglobin content; 8 high glycolytic / glycogen content / glycogen stores; 9 high myosin ATPase levels; 10 high PC stores; 11 low triglyceride stores; 12 narrow Z-line thickness; 13 large number of fibres per motor neurone;	<b>4</b>

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<b>Question</b>	<b>Answer</b>	<b>Marks</b>
1(c)	<p>1 mark for:</p> <p>(hormonal)</p> <p>1 noradrenaline / adrenaline is released (from the adrenal glands);</p> <p>and 4 marks for any 4 of:</p> <p>(intrinsic)</p> <p>2 increase in temperature of heart muscle / myocardium <b>speeds</b> up conduction process;</p> <p>3 heart muscle / myocardium becomes <b>more</b> elastic / stretches further;</p> <p>4 allows <b>greater</b> (diastolic) filling of the heart with blood / increased end diastolic volume;</p> <p>5 venous return increases during exercise, <b>stretching</b> cardiac muscles;</p> <p>(hormonal or intrinsic)</p> <p>6 (increase in stretch) stimulates the sinoatrial node;</p> <p>7 regulates rate of firing;</p> <p>Accept opposite explanations for factors decreasing.</p>	<b>5</b>
1(d)	<p>3 marks for any 3 of:</p> <p>1 (leg) muscles contract;</p> <p>2 squeeze / compress <b>veins</b> between muscles (and bones);</p> <p>3 blood pushed / forced towards heart;</p> <p>4 (leg) muscles relax;</p> <p>5 action of valves prevent back flow of blood;</p>	<b>3</b>
1(e)	<p>4 marks for any 4 of:</p> <p>1 blood pressure increases;</p> <p>2 caused by increase in cardiac output / heart rate / stroke volume;</p> <p>3 caused by vasoconstriction of arterioles;</p> <p>4 <b>systolic</b> pressure decreases / plateaus <b>when</b> steady state reached;</p> <p>5 <b>diastolic</b> pressure shows little change / slight decrease;</p> <p>6 caused by vasodilation of arterioles;</p>	<b>4</b>

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Question	Answer	Marks
1(f)	2 marks for any 2 of: 1 in red blood cells; 2 oxygen combines with haemoglobin / forms oxyhaemoglobin; 3 (haemoglobin can carry) <b>up to four</b> molecules of oxygen; 4 some oxygen dissolves in plasma; 5 (oxygen diffuses into muscle cell) because of the diffusion gradient / diffusion from high to low pressure;	<b>2</b>
1(g)	4 marks for any 4 of: 1 rate <b>AND</b> depth of breathing increases; (inspiration) 2 <b>more forceful</b> contraction of diaphragm / external intercostals; 3 helped by sternocleidomastoid / scalenes / pectoralis minor; 4 ribcage move up / out <b>further</b> ; 5 <b>greater</b> increase in size / volume of thorax / chest cavity; 6 <b>further</b> reduction in thoracic pressure; (expiration) 7 ribcage <b>pulled</b> down / in; 8 helped by internal intercostals / abdominals; Accept reverse of points 5 and 6 for expiration.	<b>4</b>

Question	Answer	Marks
2(a)	3 marks for: 1 efficient; 2 goal directed; 3 fluent; Accept other appropriate characteristics.	<b>3</b>

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<b>Question</b>	<b>Answer</b>	<b>Marks</b>
2(b)	3 marks for any 3 of: 1 the younger you start the more likely it is for learning to take place; 2 effect of time / opportunity to practise skills; 3 effect of parent(s) / significant other / role model; 4 effect of money / finances; 5 effect of access to facilities / equipment / coaching; 6 effect of cultural / social acceptance;	<b>3</b>
2(c)	4 marks for any 4 of: 1 aim to develop / strengthen the S/R / stimulus–response bond; 2 involves trial and error learning; 3 to shape behaviour / shaping; 4 change / modify environment (to change behaviour); 5 use of reinforcement (strengthens the S–R bond); 6 positive reinforcement <b>AND</b> e.g. praise from coach / reward; 7 negative reinforcement involves withdrawal of an adverse stimulus / stop criticising; 8 punishment / annoyance <b>weakens</b> the S–R bond;	<b>4</b>
2(d)	4 marks for any 4 of: 1 <b>relevant / specific / meaningful</b> practice / overlearning; 2 practise with <b>distractions</b> ; 3 make stimuli interesting / memorable; 4 focus on / highlight specific cues; 5 increase intensity of the stimulus; 6 teach mental rehearsal / visualisation / imagery; 7 encourage anticipation; 8 ensure performer is at optimum arousal level / zone of optimum functioning; 9 motivate performer; 10 apply transfer of learning / link to transferable elements in past experiences;	<b>4</b>



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<b>Question</b>	<b>Answer</b>	<b>Marks</b>
2(e)(i)	3 marks for any 3 of: 1 occurs before / prior to performance; 2 initiates movement / provides motor programme; 3 uses knowledge of <b>initial conditions OR environmental conditions</b> ; 4 where am I / where are my limbs positioned / what is happening?; 5 uses knowledge of <b>response specifications OR movement demands OR response demands</b> ; 6 what do I need to do (in this sporting situation)?;	<b>3</b>
2(e)(ii)	3 marks for any 3 of: 1 vary practice conditions; 2 provide plenty of information; 3 practice must be relevant to game <b>OR</b> practise using conditioned / small-sided games; 4 give (frequent) feedback; 5 provide tasks that are challenging; 6 include transferable information from other sports <b>OR</b> ensure performers are aware of transfer possibilities; 7 use slow-motion practice / video analysis / visual aids / guidance;	<b>3</b>
2(f)	3 marks for 3 of:  sub-max. 1 mark for example 1 suitable example of dummyming / feinting / faking / deflected shot;  sub-max. 2 marks for explanation 2 increases / lengthens reaction time; 3 one signal / stimulus is processed (before others can be processed) <b>OR</b> can only deal with one stimulus at a time; 4 causes delay in processing second stimulus; 5 called single-channel hypothesis / bottleneck theory;	<b>3</b>
2(g)(i)	1 mark for:  1 description of an example of a <b>skill helping</b> to learn / performance of another skill, e.g. netball shooting improving basketball shooting;	<b>1</b>

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Question	Answer	Marks
2(g)(ii)	2 marks for any 2 of: 1 make sure activities included are transferrable / relevant to other activities; 2 make sure that skills are thoroughly learned before attempting other skills / planned progression; 3 make performer aware of the effects of / potential for transfer; 4 use of reinforcement / rewards;	<b>2</b>
2(h)	4 marks for any 4 of: 1 extrinsic motivation is use of rewards from another person / outside performer; 2 overuse of extrinsic motivation can decrease its value / importance / becomes ineffective; 3 performer may only participate for reward <b>OR</b> become reliant on it; 4 overuse of extrinsic motivation damages / reduces intrinsic motivation; 5 overuse of extrinsic motivation adds pressure / can lead to deviant behaviour / cheating; 6 excessive extrinsic motivation threatens autonomy / individuality of performer;	<b>4</b>

Question	Answer	Marks
3(a)(i)	4 marks for:  (real risk) 1 objective danger / actual <b>danger</b> from activity; 2 e.g. fall down hill / capsize / fall from rocks / flooding / adverse weather / strong tides;  (perceived risk) 3 subjective danger / <b>think</b> of the danger / fear of danger; 4 e.g. fear of falling / worry about drowning;	<b>4</b>

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<b>Question</b>	<b>Answer</b>	<b>Marks</b>
3(a)(ii)	<p>4 marks for any 4 of:</p> <ol style="list-style-type: none"> <li>1 improve mental health / stress relief / self-realisation / self-fulfilment / self-esteem / self-awareness / self-reliance / knowing strengths and weaknesses / personal limits;</li> <li>2 improve physical health / fitness;</li> <li>3 improve social health / socialising / with others / friends / teamwork / socialisation;</li> <li>4 cognitive / thinking skills / decision-making / problem-solving / learn how to overcome challenges;</li> <li>5 leadership / responsibility;</li> <li>6 commitment / determination;</li> <li>7 learn new physical skills / survival skills / map reading;</li> <li>8 lifelong learning / career / gain awards / qualifications;</li> <li>9 appreciation of natural environment / respect for countryside / learn about nature / conservation;</li> <li>10 appreciation of risk / adrenaline rush / excitement;</li> </ol>	<b>4</b>
3(a)(iii)	<p>3 marks for any 3 of:</p> <ol style="list-style-type: none"> <li>1 complex / many rules <b>OR</b> predetermined rules;</li> <li>2 high structure / organisation / leagues / cups;</li> <li>3 pre-determined playing area / boundaries;</li> <li>4 equal player numbers;</li> <li>5 time constraints;</li> <li>6 playing roles;</li> <li>7 standardised equipment / facilities;</li> <li>8 specific kit;</li> <li>9 officials;</li> <li>10 tactics / strategies;</li> <li>11 may have extrinsic rewards;</li> <li>12 high level of commitment / effort / training / practice;</li> </ol>	<b>3</b>

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<b>Question</b>	<b>Answer</b>	<b>Marks</b>
3(b)	<p>5 marks for any 5 of:</p> <p>Answers must <b>describe</b> the provision required by a performer to achieve excellence in sport.</p> <ol style="list-style-type: none"> <li>1 described government initiatives;</li> <li>2 described National Governing Body / sport-specific initiatives;</li> <li>3 selection procedures / talent-identification programmes;</li> <li>4 use of specialist schools / colleges / universities;</li> <li>5 specialist training venues / centres of excellence / training camps;</li> <li>6 elite coaching structure;</li> <li>7 description of 'World Class' / development programmes / training programmes / scholarships;</li> <li>8 structured levels of competition;</li> <li>9 description of schools / clubs / local / regional governing bodies;</li> <li>10 medical support structures / medical / physiotherapy / equivalent;</li> <li>11 scientific support structures / sports science / fitness / conditioning / biomechanics / equivalent;</li> <li>12 other support structures / nutritionist / media training / equivalent;</li> <li>13 description of funding methods;</li> </ol>	<b>5</b>

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Question	Answer	Marks																				
3(c)	<p>3 marks for any 3 of:</p> <p>Credit suitable similarities as well as differences.</p> <table border="1" data-bbox="338 352 1928 1107"> <thead> <tr> <th data-bbox="338 352 1223 416">public</th> <th data-bbox="1223 352 1928 416">private</th> </tr> </thead> <tbody> <tr> <td data-bbox="338 416 1223 517">1 provided / funded / run by local authority / council / (local) government</td> <td data-bbox="1223 416 1928 517">provided / funded / run by business / company;</td> </tr> <tr> <td data-bbox="338 517 1223 580">2 move to private management / CCT / Best Value</td> <td data-bbox="1223 517 1928 580">provided / funded / run by business / company;</td> </tr> <tr> <td data-bbox="338 580 1223 681">3 trading on set prices / charges / according to pre-set budget / may be non-profit making</td> <td data-bbox="1223 580 1928 681">usually profit-making;</td> </tr> <tr> <td data-bbox="338 681 1223 780">4 generally lower fees / may involve subsidies / council tax / equivalent</td> <td data-bbox="1223 681 1928 780">financed by high / monthly fees;</td> </tr> <tr> <td data-bbox="338 780 1223 844">5 open to all / may offer memberships / may be pay-as-you-go</td> <td data-bbox="1223 780 1928 844">usually members only / may be pay-as-you-go;</td> </tr> <tr> <td data-bbox="338 844 1223 908">6 public service / community provision / provision at every level</td> <td data-bbox="1223 844 1928 908">only available for those who can afford it / elitist;</td> </tr> <tr> <td data-bbox="338 908 1223 971">7 generally less well equipped</td> <td data-bbox="1223 908 1928 971">tend to have modern / best equipment;</td> </tr> <tr> <td data-bbox="338 971 1223 1035">8 generally cheap</td> <td data-bbox="1223 971 1928 1035">tend to be expensive;</td> </tr> <tr> <td data-bbox="338 1035 1223 1107">9 generally limited qualified training staff</td> <td data-bbox="1223 1035 1928 1107">tend to have more specialist staff / personal trainers;</td> </tr> </tbody> </table>	public	private	1 provided / funded / run by local authority / council / (local) government	provided / funded / run by business / company;	2 move to private management / CCT / Best Value	provided / funded / run by business / company;	3 trading on set prices / charges / according to pre-set budget / may be non-profit making	usually profit-making;	4 generally lower fees / may involve subsidies / council tax / equivalent	financed by high / monthly fees;	5 open to all / may offer memberships / may be pay-as-you-go	usually members only / may be pay-as-you-go;	6 public service / community provision / provision at every level	only available for those who can afford it / elitist;	7 generally less well equipped	tend to have modern / best equipment;	8 generally cheap	tend to be expensive;	9 generally limited qualified training staff	tend to have more specialist staff / personal trainers;	<b>3</b>
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<b>Question</b>	<b>Answer</b>	<b>Marks</b>
3(d)	<p>4 marks for any 4 of:</p> <ol style="list-style-type: none"> <li>1 challenge negative attitudes to women’s sport;</li> <li>2 more women’s clubs / teams / competitions;</li> <li>3 women-only access to facilities;</li> <li>4 increased media coverage of women’s sport / advertising / publicity / role models / campaigns;</li> <li>5 governing bodies to give more funding for the development of women’s sport;</li> <li>6 encourage families to promote sport for women / cultural recognition by organisations;</li> <li>7 increase prize money in major events to match that of men / recognition via awards <b>OR</b> higher / equal pay;</li> <li>8 role of schools, e.g. offering wider range of activities / more freedom of choice with kit;</li> <li>9 governing bodies to encourage more women administrators / coaches / officials;</li> <li>10 offer social and recreational experiences;</li> <li>11 equal opportunities acts (and similar) in place;</li> </ol> <p>Accept other valid suggestions.</p>	<b>4</b>
3(e)	<p>3 marks for any 3 of:</p> <ol style="list-style-type: none"> <li>1 penalties <b>during</b> the event, e.g. bookings / free kicks / sin bin;</li> <li>2 penalties <b>after</b> the event, e.g. bans / fines;</li> <li>3 fair-play awards / allocation of place in major event based on good disciplinary record;</li> <li>4 clubs / teams fined <b>OR</b> points deducted;</li> <li>5 matches played behind closed doors <b>OR</b> spectators banned from watching;</li> <li>6 fair-play charters / codes of conduct / campaigns;</li> <li>7 drug testing / biological passport;</li> <li>8 positive role models;</li> <li>9 use of technology / video replays / TMO / 3<sup>rd</sup> umpire;</li> </ol>	<b>3</b>

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<b>Question</b>	<b>Answer</b>	<b>Marks</b>
3(f)	4 marks for any 4 of:  1 some products / tobacco / alcohol / fast food are unhealthy / reflect badly on performer; 2 product may not suit the performer's image / damage future marketability / sponsorship deals; 3 performer 'tied' to sponsors' demands / meet media commitments / loss of privacy; 4 may feel they have to play when injured; 5 performer restricted to using / wearing certain products; 6 uncertain availability / sudden loss of sponsorship due to poor results; 7 need to win to maintain sponsorship / may lead to cheating / win-at-all-costs ethic;	<b>4</b>