



## Cambridge International AS & A Level

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PHYSICAL EDUCATION

9396/32

Paper 3

May/June 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 May/June 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 **13** 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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Question	Answer	Marks
1(a)	5 marks for any 5 of: <ol style="list-style-type: none"> <li>1 anaerobic / glycolysis / absence of oxygen;</li> <li>2 breakdown of carbohydrate / glycogen / glucose;</li> <li>3 carbohydrate / glycogen / glucose <b>to pyruvic acid / pyruvate</b>;</li> <li>4 pyruvate / pyruvic acid <b>to lactic acid / lactate</b>;</li> <li>5 in sarcoplasm;</li> <li>6 2 ATP produced (per molecule of glucose);</li> <li>7 (one named enzyme) GP / GPP / glycogen phosphorylase / PFK / phosphofructokinase / LDH / lactate dehydrogenase;</li> </ol>	<b>5</b>
1(b)	1 mark for: <ol style="list-style-type: none"> <li>1 <b>high-intensity</b> activity lasting <b>more than 8 seconds</b> <b>OR</b> e.g. sprinting for <b>more than 8 seconds / 80 metres</b>;</li> </ol> 2 marks for any 2 of: <ol style="list-style-type: none"> <li>2 PC / phosphocreatine levels drop;</li> <li>3 increase in ADP;</li> <li>4 increase in calcium;</li> <li>5 activation of PFK / phosphofructokinase;</li> </ol>	<b>3</b>
1(c)	5 marks for any 5 of: <ol style="list-style-type: none"> <li>1 EPOC / excess post-exercise oxygen consumption / oxygen debt;</li> <li>2 more oxygen taken in for aerobic energy;</li> <li>3 higher ventilation / circulation (than at rest);</li> <li>4 higher temperature / sweating / perspiration;</li> <li>5 fast / alactacid (debt) component;</li> <li>6 (which takes) 2–3 minutes for full recovery <b>OR</b> 50% in 30 seconds <b>OR</b> uses up to 4 litres of oxygen;</li> <li>7 restoration of ATP / PC / phosphagen;</li> <li>8 replenishment of myoglobin with oxygen <b>OR</b> restoration of oxymyoglobin link;</li> <li>9 slow / lactacid (debt) component;</li> <li>10 (which takes about) 1–2 hours <b>OR</b> 50% in 15 minutes;</li> <li>11 removal of lactic acid / CO<sub>2</sub>;</li> <li>12 replenishment of glycogen stores;</li> </ol>	<b>5</b>

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Question	Answer	Marks
1(d)	4 marks for:  1 (overload) putting more stress on the body / work harder than normal / increasing the amount of work done (to cause an adaptation); 2 (example) lifting <b>more / heavier</b> weights <b>OR</b> training for <b>longer OR more times</b> per week; 3 (variance) using a variety / range of activities / methods; 4 (example) changing resistance / weight exercises <b>OR</b> changing from jogging to cycling;	<b>4</b>
1(e)(i)	2 marks for:  1 (maximum strength) <b>maximum / greatest force</b> produced in <b>one / a single</b> muscle contraction; 2 (explosive strength) force / muscle contractions produced <b>quickly / fast / powerfully</b> ;	<b>2</b>
1(e)(ii)	4 marks for any 4 of:  1 hopping / bounding / jumping / named exercise; 2 second named exercise from above; 3 2–6 sets; 4 low repetitions / reps <b>OR</b> over a short distance; 5 (recovery) 1–4 minutes (between sets) / full recovery; 6 eccentric muscle contractions <b>OR</b> lengthening / pre-load / stretching of muscle / stretch-shortening cycle <b>OR</b> use of stretch reflex; 7 amortisation phase / change from eccentric to concentric; 8 concentric muscle contraction phase uses stored energy to increase force of contraction; 9 the greater pre-load / the higher the jump the greater the contraction; 10 performers must have good strength to do plyometrics <b>OR</b> may cause muscle soreness / overuse injuries;	<b>4</b>
1(f)	3 marks for:  1 (balance) stork / flamingo / balance beam / balance board / BASS / LESS / star excursion / Y balance / SEBT; 2 (agility) illinois run / shuttle run / hexagon / T-test / zig-zag / 505; 3 (body composition) skin-fold / fat callipers / BMI / bioelectrical impedance / body fat scales / hydrostatic weighing / bod pod;  Accept other named recognised tests.	<b>3</b>

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Question	Answer	Marks
1(g)	<p>4 marks for any 4 of:</p> <ol style="list-style-type: none"> <li>1 increase in strength / power / speed / muscle mass / size;</li> <li>2 increase in <b>bone</b> density / strength;</li> <li>3 increase in metabolism <b>OR</b> reduces body fat <b>OR</b> weight loss;</li> <li>4 faster recovery (after training) <b>OR</b> faster tissue repair;</li> <li>5 abnormal growth of bone / muscle / vital organs / hands / feet / face / acromegaly / carpal tunnel syndrome;</li> <li>6 high blood pressure / heart attacks;</li> <li>7 risk of cancers / diabetes;</li> <li>8 less natural GH production <b>OR</b> decrease in size of pituitary gland;</li> </ol>	<b>4</b>

Question	Answer	Marks																		
2(a)	<p>3 marks for any 3 of:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: center;">trait</th> <th style="text-align: center;">social learning</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td>nature</td> <td>nurture;</td> </tr> <tr> <td style="text-align: center;">2</td> <td>innate / inherited / genetic</td> <td>(shaped by) copying / people / significant others / reinforcement;</td> </tr> <tr> <td style="text-align: center;">3</td> <td>stable / enduring / constant / predictable</td> <td>unstable / changeable;</td> </tr> <tr> <td style="text-align: center;">4</td> <td>behaviour is a function of personality</td> <td>behaviour is a function of <b>environment</b>;</td> </tr> <tr> <td style="text-align: center;">5</td> <td>Cattell / Freud / Eysenck</td> <td>Bandura / Mischel;</td> </tr> </tbody> </table>		trait	social learning	1	nature	nurture;	2	innate / inherited / genetic	(shaped by) copying / people / significant others / reinforcement;	3	stable / enduring / constant / predictable	unstable / changeable;	4	behaviour is a function of personality	behaviour is a function of <b>environment</b> ;	5	Cattell / Freud / Eysenck	Bandura / Mischel;	<b>3</b>
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Question	Answer	Marks
2(b)	<p>4 marks for any 4 of:</p> <ol style="list-style-type: none"> <li>1 team-bonding activities <b>OR</b> encourage friendships;</li> <li>2 reward / praise good cohesion / teamwork / 'assists';</li> <li>3 punish players who are not cohesive;</li> <li>4 set <b>team</b> goals / work on set plays / team tactics / interactive skills;</li> <li>5 give <b>individual</b> roles / goals / responsibilities;</li> <li>6 credit personal success / individual performances;</li> <li>7 select 'team' players;</li> <li>8 encourage group identity / team kit;</li> <li>9 select a captain who is respected by team;</li> </ol>	<b>4</b>
2(c)	<p>3 marks for any 3 of:</p> <ol style="list-style-type: none"> <li>1 good communication skills;</li> <li>2 charisma / presence / commands respect;</li> <li>3 good motivator / inspirational;</li> <li>4 enthusiastic / dedicated / highly motivated;</li> <li>5 empathy / gets on well with others / see others' points of view;</li> <li>6 vision / clear goals / knows what needs to be done;</li> <li>7 good knowledge of the sport / experienced;</li> <li>8 high-level performer / one of the best players;</li> <li>9 uses correct leadership styles / flexible / adaptable;</li> <li>10 good organiser;</li> <li>11 self-confidence;</li> </ol> <p>Credit other relevant characteristics.</p>	<b>3</b>
2(d)	<p>3 marks for:</p> <ol style="list-style-type: none"> <li>1 (narrow external), e.g. tennis player focusing only on the ball;</li> <li>2 (broad external), e.g. netballer <b>looking for</b> passing options;</li> <li>3 (broad internal), e.g. rugby hooker <b>thinking</b> about line-out calls;</li> </ol>	<b>3</b>



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Question	Answer	Marks
2(e)	4 marks for any 4 of: 1 perfect / high-quality performance; 2 performance feels effortless / fluent / automatic; 3 high level of confidence; 4 feeling of being in control; 5 relaxed / calm / low anxiety; 6 focused / selective attention / ignoring distractions; 7 enjoyment / satisfaction; 8 <b>optimum</b> arousal;	<b>4</b>
2(f)(i)	2 marks for any 2 of: 1 anxiety / <b>increased</b> arousal (experienced by a performer); 2 a perception / perceived fear; 3 (that) people / audience are <b>judging</b> the performance; 4 dependent on who is in the audience <b>OR</b> it is not just the presence of an audience;	<b>2</b>
2(f)(ii)	3 marks for any 3 of: 1 social inhibition / overarousal / impairs performance; 2 social facilitation / enhances performance; 3 increased likelihood of dominant response; 4 highly skilled / extrovert / need to achieve / autonomous performers may perform better; 5 novices / beginners / introvert / need to avoid failure / cognitive performers may perform worse;	<b>3</b>
2(g)(i)	2 marks for: 1 (explanation) <b>forceful</b> behaviour / no intent to harm <b>AND within the rules / laws</b> ; 2 (example) smash in tennis;	<b>2</b>

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Question	Answer	Marks
2(g)(ii)	<p>6 marks for any 6 of:</p> <ol style="list-style-type: none"> <li>1 punish / negatively reinforce aggressive play;</li> <li>2 reward / positively reinforce non-aggressive play;</li> <li>3 promote non-aggressive role models;</li> <li>4 teach performers the implications of aggression <b>OR</b> teach performers to use rational thinking;</li> <li>5 teach performer to walk away / avoid aggressive situations;</li> <li>6 remove performer from situation / substitute / change position on pitch;</li> <li>7 lower arousal levels;</li> <li>8 selective attention / block out aggressive cues;</li> <li>9 use of somatic relaxation techniques / deep breathing;</li> <li>10 use cognitive relaxation techniques / imagery / mental rehearsal / count to 10 / positive self-talk;</li> <li>11 reduce the importance of the event / outcome;</li> <li>12 set process / performance goals;</li> <li>13 give position of responsibility;</li> <li>14 <b>encourage</b> channelled aggression / assertion;</li> </ol>	<b>6</b>

Question	Answer	Marks
3(a)	<p>3 marks for any 3 of:</p> <ol style="list-style-type: none"> <li>1 abide by the rules / laws of the sport / not cheating;</li> <li>2 show good sportsmanship / respect opponents / officials / shaking hands;</li> <li>3 do not use gamesmanship;</li> <li>4 do not use (illegal performance-enhancing) drugs;</li> <li>5 help an injured competitor;</li> <li>6 modest in victory;</li> <li>7 generous in defeat;</li> </ol>	<b>3</b>

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Question	Answer	Marks
3(b)	<p>6 marks for any 6 of:</p> <ol style="list-style-type: none"> <li>1 lack of public support (in the host country);</li> <li>2 fears about high costs / financial burden to city / higher taxes;</li> <li>3 high cost of bidding process;</li> <li>4 costs to host country are rising each Olympic Games / spiral of extravagance;</li> <li>5 IOC only pledge (very) small amount of money to help hosts;</li> <li>6 lack of (long-term) economic benefits (to city / country);</li> <li>7 lack of experience in organising such a massive range of projects;</li> <li>8 increase in pollution / environmental concerns;</li> <li>9 abandoned arenas / white elephants / (have become) environmental hazards (e.g. Rio 2016);</li> <li>10 if city does not have sporting facilities beforehand, why would they need them after the Olympic Games?;</li> <li>11 concern that city officials / influential businessmen may be driven by self-interest;</li> <li>12 concern about meeting legacy requirements;</li> <li>13 doubts about the positive legacy for host nation;</li> <li>14 concerns about relocation of local people;</li> <li>15 fear of terrorism;</li> <li>16 concerns about pandemic / COVID;</li> </ol>	<b>6</b>
3(c)	<p>3 marks for:</p> <ol style="list-style-type: none"> <li>1 (1976) protest against NZ rugby tour to South Africa;</li> <li>2 (1980) protest at USSR invasion of Afghanistan;</li> <li>3 (1984) tit-for-tat / retaliation for Moscow boycott <b>OR</b> in protest at use of Games to promote western political ideology <b>OR</b> concerns about security;</li> </ol>	<b>3</b>
3(d)	<p>3 marks for any 3 of:</p> <ol style="list-style-type: none"> <li>1 tourism benefits;</li> <li>2 revenue from television networks / TV rights;</li> <li>3 ticket sales;</li> <li>4 merchandise sales;</li> <li>5 sponsorship / marketing programmes;</li> <li>6 income / tax from employment opportunities;</li> </ol>	<b>3</b>

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Question	Answer	Marks
3(e)	<p>4 marks for any 4 of:</p> <ol style="list-style-type: none"> <li>1 amateurs are part-time athletes <b>OR</b> professionals are full-time athletes;</li> <li>2 amateurs have to work / fit training around work <b>OR</b> professionals do not have to work / can train full time;</li> <li>3 amateurs generally get less sponsorship;</li> <li>4 amateurs cannot afford high cost / expense of training / competing / travel;</li> <li>5 amateurs may not have access to best facilities / equipment;</li> <li>6 amateurs may not have access to best coaching / science support;</li> </ol>	<b>4</b>
3(f)	<p>3 marks for any 3 of:</p> <ol style="list-style-type: none"> <li>1 cheat;</li> <li>2 take bribes;</li> <li>3 show bias / favour certain performers;</li> <li>4 deliberately give low scores for good performances <b>OR</b> give high scores for poor performances;</li> <li>5 take substances that <b>impair</b> decision making;</li> <li>6 betting on events they are involved in;</li> </ol>	<b>3</b>
3(g)	<p>4 marks for any 4 of:</p> <ol style="list-style-type: none"> <li>1 worked at Stoke Mandeville hospital <b>OR</b> treated patients with spinal injuries <b>OR</b> set up spinal unit;</li> <li>2 belief in rehabilitation / strength benefits of sport;</li> <li>3 morale-boosting effects / gain self-respect through sport;</li> <li>4 set up Stoke Mandeville Games;</li> <li>5 demonstration of disabled sports in opening ceremony of 1948 London Olympic Games;</li> <li>6 recognition by IOC of his services to disabled sport;</li> <li>7 Stoke Mandeville Games held alongside 1960 Rome Olympic Games <b>OR</b> 1960 Games were first to be called Paralympic Games;</li> </ol>	<b>4</b>

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<b>Question</b>	<b>Answer</b>	<b>Marks</b>
3(h)	4 marks for any 4 of:  1 athletes compete as individuals; 2 removal of national anthems at medal ceremonies / use of Olympic anthem; 3 removal of medal count / medal table; 4 removal of national uniforms; 5 removal of national flags; 6 removal of team sports; 7 use of one permanent host site / venues across several countries; 8 <b>revision</b> of opening / closing ceremonies; 9 media to present Games as non-political; 10 IOC to fully fund costs of hosting Games; 11 IOC to take control of running the Games;	<b>4</b>