



## Cambridge International AS & A Level

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PHYSICAL EDUCATION

9396/32

Paper 3

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 **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.

**PUBLISHED****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)(i)	2 marks for: 1 (energy) ability / capacity to do work; 2 (power) the rate at which work is performed <b>OR</b> amount of work performed per unit of time <b>OR</b> strength × speed;	<b>2</b>
1(a)(ii)	2 marks for: 1 (energy) (kilo)joules / (kilo)calories / erg; 2 (power) watts / joules per second;	<b>2</b>
1(b)	5 marks for any 5 of: 1 fast component; 2 resynthesis of PC stores / replenishment of muscle phosphagen stores; 3 uses the aerobic system; 4 circulatory and respiratory rates remain elevated; 5 takes 2–3 minutes for full recovery / 30 seconds for 50% recovery; 6 uses up to 4 litres of oxygen; 7 restoration of myoglobin stores (with oxygen) / restoration of oxy–myoglobin link; 8 takes 1–2 minutes; 9 uses 0.5 litres of oxygen;	<b>5</b>

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Question	Answer				Marks
1(c)	4 marks for 4 of:				4
	factor		explanation		
	1 muscle fibre type;	2	fast-twitch fibres produce more strength (than slow twitch);		
	3 cross-sectional area / size (of muscle);	4	the greater the size / cross-sectional area of muscle, the greater the strength;		
	5 lifestyle / training / illness / injury;	6	an active lifestyle / manual labour / strength training results in an increase in strength <b>OR</b> injury may cause a decrease in strength / unable to train;		
	7 gender;	8	males tend to have higher muscle mass, which means greater strength;		
	9 age;	10	strength declines after 30 years of age <b>OR</b> strength peaks between 16–30 years of age;		
	11 drugs / hormones / steroids;	12	testosterone causes increase in muscle mass / strength;		
	13 limb length / point of tendon insertion;	14	shorter limbs / tendon insertion position can give a more efficient lever system / greater force can be produced;		
1(d)(i)	3 marks for any 3 of:				3
	1 warm-up (thoroughly) first / example of warm-up activity;				
	2 swinging / bouncing movements / use of momentum;				
	3 e.g. high leg kicks / arm swings;				
	4 repetitions / reps / sets <b>OR</b> timescale (e.g. 10 seconds);				

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<b>Question</b>	<b>Answer</b>	<b>Marks</b>
1(d)(ii)	<p>3 marks for any 3 of:</p> <ol style="list-style-type: none"> <li>1 only good for those who already have good flexibility;</li> <li>2 good for improving <b>dynamic</b> flexibility;</li> <li>3 good for activities requiring explosive movements / development of speed / power / explosive strength;</li> <li>4 greater risk of injury (than other types of stretching);</li> <li>5 limited / no increase in static flexibility / overall range of motion;</li> <li>6 can cause tightening of muscle;</li> <li>7 activates the stretch reflex;</li> </ol>	<b>3</b>
1(d)(iii)	<p>2 marks for any 2 of:</p> <ol style="list-style-type: none"> <li>1 increased range of motion;</li> <li>2 increased <b>resting / residual</b> length of muscle;</li> <li>3 increased elasticity of muscle / connective tissue;</li> <li>4 reduced / delayed stimulus of stretch reflex;</li> <li>5 muscle <b>spindles</b> adapt to new length;</li> <li>6 decreased inhibition from antagonist;</li> </ol>	<b>2</b>
1(e)	<p>3 marks for:</p> <ol style="list-style-type: none"> <li>1 (coordination) Anderson / wall toss / stick flip / block transfer / soda pop / Minnesota rate of manipulation / finger–nose;</li> <li>2 (reaction time) ruler drop / batak board / light board / Groningen / SVT / online tests;</li> <li>3 (speed) 5–100 metre sprint / plate tapping;</li> </ol> <p>Each recognised test must be different.</p>	<b>3</b>

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Question	Answer	Marks
1(f)	<p>6 marks for any 6 of:</p> <ol style="list-style-type: none"> <li>1 (water) maintains hydration / prevents dehydration / rehydrate;</li> <li>2 (carbohydrates) maintain / top up (blood) glucose levels;</li> <li>3 preserve (muscle) <b>glycogen</b> stores;</li> <li>4 replace electrolytes / salts / minerals;</li> <li>5 reduce fatigue / cramps;</li> <li>6 food intake has limited value if exercise period is less than 1 hour;</li> <li>7 too much food / fluid intake will have negative effects / impair performance;</li> <li>8 endurance athletes may use hypertonic drinks during event;</li> </ol>	<b>6</b>

Question	Answer	Marks
2(a)	<p>3 marks for any 3 of:</p> <ol style="list-style-type: none"> <li>1 personality / behaviour is dependent on the environment / environmental influences;</li> <li>2 (personality is developed through) observing <b>AND</b> copying / mimicking / socialisation;</li> <li>3 role models / significant others are more likely to be copied;</li> <li>4 reinforcement makes learning more likely;</li> <li>5 more likely to occur if model is similar to learner;</li> <li>6 Bandura;</li> </ol>	<b>3</b>
2(b)	<p>4 marks for:</p> <ol style="list-style-type: none"> <li>1 (persuader) if persuader is high status / role model then more likely to change;</li> <li>2 (recipient) performer must want to change / mood state;</li> <li>3 (message) message must be clear / informative / accurate;</li> <li>4 (situation) timing / context / one-to-one allows recipient to take in information;</li> </ol> <p><b>OR</b> if others around are supporting the message the performer is more likely to change;</p>	<b>4</b>



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<b>Question</b>	<b>Answer</b>	<b>Marks</b>
2(c)	<p>5 marks for any 5 of:</p> <p>Max. 3 marks if no sporting examples used. Max. 4 marks if only one sporting example used.</p> <ol style="list-style-type: none"> <li>1 <b>Ringelmann</b> effect;</li> <li>2 increase in group size, e.g. rugby team v basketball team;</li> <li>3 lack of identifiable roles / accountability, e.g. who calls move in rugby;</li> <li>4 lack of communication, e.g. rugby player misheard line-out call;</li> <li>5 poor tactics / goals, e.g. using wrong type of defence in basketball;</li> <li>6 poor leadership, e.g. netball captain not respected;</li> <li>7 level of competition / opposition, e.g. rugby opponents are far better;</li> <li>8 negative effects of audience, e.g. distracted by shouts of football crowd;</li> <li>9 increase in anxiety / aggression / overarousal / focus too narrow / cues missed, e.g. rugby player is only interested in dominating their opposite number;</li> <li>10 injury / illness / substitution of (key) players, e.g. wing attack in netball has been subbed off for a rest;</li> </ol>	<b>5</b>
2(d)	<p>4 marks for any 4 of:</p> <ol style="list-style-type: none"> <li>1 link between attention / attentional style / attentional control <b>AND</b> performance;</li> <li>2 at low arousal attention / focus is too wide / too many cues;</li> <li>3 if arousal is too high attention / focus is too narrow / important cues are missed / hypervigilance;</li> <li>4 ... therefore performance is low;</li> <li>5 under / overarousal causes <b>attentional wastage</b>;</li> <li>6 as arousal increases attention / focus narrows;</li> <li>7 at optimum arousal attention / focus is only on relevant cues;</li> <li>8 ... therefore performance is optimum / at its best;</li> <li>9 link / association with inverted-U theory;</li> </ol>	<b>4</b>

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<b>Question</b>	<b>Answer</b>	<b>Marks</b>
2(e)	<p>6 marks for any 6 of:</p> <ol style="list-style-type: none"> <li>1 increase in arousal / anxiety;</li> <li>2 increased likelihood of <b>dominant response</b>;</li> <li>3 link to drive theory <b>OR</b> reference to Zajonc;</li> <li>4 social facilitation;</li> <li>5 social inhibition;</li> <li>6 high ability / autonomous perform better <b>OR</b> low ability / cognitive perform worse;</li> <li>7 extroverts tend to perform better <b>OR</b> introverts tend to perform worse;</li> <li>8 gross / simple skills performed better <b>OR</b> fine / complex skills performed worse;</li> <li>9 nature of audience / being judged may enhance / impair performance;</li> <li>10 ... this is called <b>evaluation apprehension</b>;</li> <li>11 distraction effect may impair performance;</li> <li>12 homefield advantage (phenomenon) may enhance / impair performance;</li> </ol>	<b>6</b>
2(f)	<p>4 marks for:</p> <p>(aggression)</p> <ol style="list-style-type: none"> <li>1 (definition) action intended to harm <b>outside the rules</b> of the sport;</li> <li>2 (example) footballer does a two-footed tackle on an opponent;</li> </ol> <p>(assertion)</p> <ol style="list-style-type: none"> <li>3 (definition) forceful behaviour <b>within the rules</b> of the sport;</li> <li>4 (example) boxer landing a knock-out punch;</li> </ol>	<b>4</b>
2(g)	<p>4 marks for any 4 of:</p> <p>Max. 2 marks if no examples used. Max. 3 marks if only one example used.</p> <ol style="list-style-type: none"> <li>1 attribute <b>failure</b> to <b>internal</b> factors (that are controllable), e.g. we lost the tennis match because we did not put enough effort in;</li> <li>2 attribute <b>failure</b> to <b>unstable</b> factors, e.g. we were unlucky to lose the hockey match;</li> <li>3 attribute <b>failure</b> to <b>controllable / changeable</b> factors, e.g. we lost the netball game but if we change our tactics we will improve;</li> <li>4 attribute <b>success</b> to <b>internal / stable</b> factors, e.g. our ability is better than our cross-country running opponents;</li> <li>5 may lead to mastery orientation <b>OR</b> prevent learned helplessness;</li> </ol>	<b>4</b>

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<b>Question</b>	<b>Answer</b>	<b>Marks</b>
3(a)	3 marks for any 3 of:  1 striving for excellence in sport / to be the best <b>OR</b> pressure to do well; 2 competing against the best athletes in the world; 3 making progress against personal goals / reaching personal objectives / giving one's best; 4 respect for one another / rules / fair play / the (challenging) environment; 5 a combination of a strong <b>body</b> (and will) <b>AND mind</b> ;	<b>3</b>
3(b)	4 marks for any 4 of:  1 every 4 years / Olympiad; 2 Olympia (venue); 3 oath / opening ceremony / flame; 4 (named event), e.g. athletics / wrestling / boxing / pankration / hoplite race / chariot races; 5 5 days; 6 males / Greek citizens only / women banned; 7 religious ceremony / festival nature / cultural event / music / dancing / poetry; 8 (compulsory) training period; 9 wreaths as prizes / prize-giving ceremony / banquet / feast; 10 competitors were naked; 11 severe punishments / flogging / banishment for rule-breaking;	<b>4</b>
3(c)	3 marks for any 3 of:  1 consists of (about 100) members / delegates; 2 (members) are elected / invited (by IOC); 3 executive board / president as head; 4 organises meetings / sessions; 5 <b>commissions</b> , e.g. athletes' commission / women in sport commission; 6 link between outside agencies, e.g. sports federations, NOCs and OCOGs; 7 not all countries represented;	<b>3</b>

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<b>Question</b>	<b>Answer</b>	<b>Marks</b>
3(d)(i)	3 marks for any 3 of: 1 nationalism (as ideology); 2 to show the strength of Nazi Germany / Third Reich; 3 to demonstrate superiority of <b>Aryan</b> race; 4 Jewish athletes not selected for German team; 5 games were extremely well organised; 6 Olympic film produced as propaganda;	<b>3</b>
3(d)(ii)	4 marks for any 4 of: 1 black (American) athlete; 2 won 4 gold medals; 3 beat <b>German</b> athletes (including world champion in long jump); 4 good sportsmanship / friendship shown between Owens and German long jumper; 5 Owens respected and treated as a hero by German public; 6 showed that Aryan race was not superior;	<b>4</b>
3(e)	3 marks for any 3 of: 1 travel restrictions / traffic congestion; 2 increased litter / pollution; 3 disruption due to building new facilities / housing / hotels / Olympic village; 4 increased taxes; 5 impact on local / national economy / use of foreign exchange reserves; 6 relocation of people; 7 funding diverted away from grass-roots sport; 8 increased risk of terrorism / crime;  Accept other appropriate negative consequences.	<b>3</b>

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<b>Question</b>	<b>Answer</b>	<b>Marks</b>
3(f)	3 marks for any 3 of:  1 rumours of widespread drug use / 'Big Drug Bust'; 2 for example, Ben Johnson / 100-metre sprint final (and other positive results); 3 rumours of bribery of judges to influence results / favour S. Korean athletes; 4 unsportsmanlike behaviour / not accepting judges' decisions / sit-down protest (by S. Korean boxer);	<b>3</b>
3(g)	3 marks for any 3 of:  1 competing against the best in the world / intensity of competition; 2 pushing achievements of body to limits of endurance; 3 <b>honour</b> of winning medal / performing at one's best; 4 representing your country; 5 opening / closing ceremony; 6 high media profile / opportunities for financial gain; 7 meeting / experiencing other cultures / sports / expanding horizon; 8 spiritual aspect / bravery of competition;	<b>3</b>
3(h)	4 marks for any 4 of:  1 Olympic Games were for amateurs only <b>OR</b> strict amateur code enforced / exclusion clauses (applied by some countries to restrict selection of athletes); 2 influence / beliefs of Pierre de Coubertin / IOC; 3 belief that working class had no concept of Olympic values / fair play / sportsmanship; 4 working class unable to take <b>time off work</b> to compete at Olympic Games; 5 working class unable to afford <b>costs</b> involved in travelling to / living expenses at Olympic Games; 6 manual labourers were excluded from selection (by some countries); 7 amateurism / IOC excluded athletes who received payment for loss of earnings / their sporting ability;	<b>4</b>