



## Cambridge International AS & A Level

---

PHYSICAL EDUCATION

9396/11

Paper 1

May/June 2022

MARK SCHEME

Maximum Mark: 90

---

**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 2022 series for most Cambridge IGCSE, Cambridge International A and AS Level and Cambridge Pre-U components, and some Cambridge O Level components.

---

This document consists of **14** 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.

**PUBLISHED**

Question	Answer	Marks
1(a)	2 marks for: 1 A (fibrous) capsule / ligament; 2 B (articular) cartilage;	<b>2</b>
1(b)(i)	1 mark for: 1 condyloid;	<b>1</b>
1(b)(ii)	2 marks for: 1 radius; 2 carpals / named relevant carpal bone;	<b>2</b>
1(c)	5 marks for: 1 flexion; 2 deltoid; 3 concentric / isotonic; 4 extension; 5 rectus femoris / vastus medialis / vastus intermedius / vastus lateralis;	<b>5</b>
1(d)(i)	3 marks for: 1 A (superior) vena cava; 2 B <b>right</b> ventricle; 3 C <b>left</b> atrioventricular / <b>left</b> AV / mitral / bicuspid valve;	<b>3</b>

**PUBLISHED**

Question	Answer	Marks
1(d)(ii)	3 marks for any 3 of: 1 (cardiac cycle) shortens / quickens; 2 diastolic phase shortens / pre-load shortens; 3 less time for filling; 4 atrial systole becomes more powerful / forceful; 5 ventricular filling becomes active process; 6 ventricular systole more powerful; 7 increased stroke volume / ejection fraction;	<b>3</b>
1(e)(i)	2 marks for: 1 there is <b>systolic</b> pressure <b>AND</b> <b>diastolic</b> pressure; 2 there is pressure during contraction <b>AND</b> pressure during relaxation; 3 120 (or higher number) is systolic pressure / when the heart contracts; 4 80 (or lower number) is diastolic pressure / when heart relaxes.	<b>2</b>
1(e)(ii)	5 marks for any 5 of: 1 blood pressure increases; 2 caused by increase in cardiac output / heart rate / stroke volume; 3 (blood pressure increase) caused by vasoconstriction of arterioles; submaximal exercise: 4 <b>systolic OR diastolic</b> pressure decreases / plateaus if exercise is submaximal; 5 because of (vaso)dilation of arterioles to muscles <b>OR</b> reduced (total) peripheral resistance / friction; maximal exercise: 6 <b>systolic</b> pressure increases / continues to increase if exercise is maximal; 7 dynamic movement involves more muscles being used so less of an increase in (systolic) blood pressure; 8 isometric / static activities / e.g. weight training cause greater increase in both systolic <b>AND</b> diastolic values;	<b>5</b>

Question	Answer	Marks
1(f)	3 marks for: 1 A a value more than 500 and less than 4800; 2 B a value more than zero and less than 3000; 3 C 1200;	<b>3</b>
1(g)	4 marks for any 4 of: 1 controlled by respiratory control centre / RCC / medulla; 2 neural control occurs without conscious thought / autonomously <b>OR</b> can be overridden through conscious thought; 3 (inspiration) nerve impulses <b>via</b> phrenic / intercostal / sympathetic nerves; 4 to <b>diaphragm AND external intercostal</b> muscles; 5 breathe in when muscles contract; 6 (expiration) impulses stop / period of relaxation; 7 weight of tissues / ribs / muscles / chest forces air out;	<b>4</b>

Question	Answer	Marks
2(a)	3 marks for: 1 efficient; 2 follows technical model; 3 aesthetically pleasing;  Accept other appropriate characteristics.	<b>3</b>
2(b)	3 marks for: 1 open skill because the environment changes / is unpredictable / unstable / adjusting movements to suit environment, e.g. goalkeeper does not know how to save the penalty until the ball is kicked; 2 high organisation skill because complex number of linked phases / cannot easily be broken down and practised separately, e.g. to dive left or right, high or low, use left or right hand; 3 complex because the skill requires many decisions to be made / lots of information processed, e.g. save depends on the movement of the shooter and the speed of the ball;	<b>3</b>

**PUBLISHED**

<b>Question</b>	<b>Answer</b>	<b>Marks</b>
2(c)(i)	2 marks for:  1 response is closely related / linked to a stimulus <b>OR</b> learning to respond to a certain stimulus <b>OR</b> performer conditioned by stimuli which are connected / associated to appropriate response; 2 (relevant example of stimulus and response), e.g. when ball is on the appropriate side of the body (stimulus) a forehand in tennis is performed (response) <b>OR</b> when starter fires a gun (stimulus) the sprinter starts (response);	<b>2</b>
2(c)(ii)	4 marks for any 4 of:  1 positive reinforcement / praise / rewards; 2 negative reinforcement / removing criticism; 3 punishment can result in strengthening a previously formed bond if response is incorrect; 4 repetition / drills / trial and error / training / law of exercise; 5 giving a 'satisfier' / satisfaction rather than an annoyer / annoyance / law of effect; 6 physical / mental preparedness / law of readiness; 7 teach as a whole to help this understanding / insight learning; 8 guidance / feedback / information to correct errors; 9 <b>shaping</b> behaviour; 10 change / modify the environment;	<b>4</b>
2(d)	4 marks for 4 of:  If no example used max. 3 marks.  1 involves feedback / time for feedback; 2 (feedback) is <b>intrinsic / kinaesthetic / proprioceptive</b> ; 3 memory trace initiates movement; 4 performer able to adjust / correct the movement; 5 by comparison with perceptual trace; 6 <b>if traces match</b> movement continues; 7 <b>if traces different</b> adjustments made to movement / corrections; 8 updates memory trace;	<b>4</b>



**PUBLISHED**

<b>Question</b>	<b>Answer</b>	<b>Marks</b>
2(e)	4 marks for any 4 of:  1 uses <b>sensory consequences</b> ; 2 from knowledge of performance / kinaesthesia / intrinsic feedback / how did it feel;  3 uses <b>response / movement outcomes</b> ; 4 from knowledge of results / success / failure;  5 (both) occur during / after performance; 6 used to adapt / modify a (future) response;	<b>4</b>
2(f)(i)	3 marks for any 3 of:  1 auditory / hearing; 2 touch / tactile; 3 balance / equilibrium; 4 kinesthetic / proprioception;	<b>3</b>
2(f)(ii)	2 marks for any 2 of:  1 effector mechanism selects motor programme from (long term) memory; 2 effector mechanism programmes the movement; 3 sends / relays decisions to muscular system; 4 via the short-term memory;	<b>2</b>
2(g)(i)	1 mark for:  1 associative;	<b>1</b>

**PUBLISHED**

Question	Answer	Marks
2(g)(ii)	4 marks for any 4 of:  1 allow time to practise; 2 provide (extrinsic) feedback; 3 encourage development of <b>intrinsic</b> feedback; 4 provide (positive) reinforcement / praise / rewards / motivation; 5 provide (manual / mechanical / verbal / visual) guidance; 6 focus on gross / major errors of technique initially; 7 as performer progresses more specific errors can be highlighted; 8 coach teaches mental rehearsal / imagery / visualisation;	<b>4</b>

Question	Answer	Marks
3(a)(i)	3 marks for any 3 of:  sport has: 1 (complex) rules; 2 high structure / organisation / leagues / cups; 3 time constraints / set times / scheduled; 4 equipment / facilities; 5 predetermined boundaries; 6 predetermined playing roles; 7 officials; 8 tactics / strategies used; 9 may have extrinsic rewards; 10 specific kit / uniform; 11 training / practices;  Accept other suitable characteristics.	<b>3</b>

**PUBLISHED**

Question	Answer	Marks
3(a)(ii)	<p>2 marks for:</p> <p>1 (equal opportunity) <b>all</b> people have the same chance / provision to take part in sport (regardless of gender / age / disability / race / reduction of discrimination / equivalent);</p> <p>2 (esteem) to have respect for participating athletes / role models / individuals <b>OR</b> how confident a person feels about participating in a sport <b>OR</b> how suitable participation maybe for an individual <b>OR</b> self-worth about their own sports participation;</p> <p>Answers must relate to sports participation.</p>	<b>2</b>
3(b)(i)	<p>4 marks for any 4 of:</p> <p>1 encourage participation / better health;</p> <p>2 to enable individuals to succeed / human potential can be discovered;</p> <p>3 create role models;</p> <p>4 increased chance of success / increase in national pride / feel-good factor / morale;</p> <p>5 advertisement for the country / recognition / shop-window effect;</p> <p>6 better facilities / coaching;</p> <p>7 provides employment opportunities;</p> <p>8 demand / expectation from population for national success;</p> <p>9 confirmation of political / social superiority;</p> <p>10 social control / positive use of performers time;</p>	<b>4</b>

**PUBLISHED**

Question	Answer	Marks
3(b)(ii)	<p>4 marks for 4 of:</p> <p>Initiatives / policies must be named for descriptions to be credited.</p> <p>Sub-max. 2 marks for named initiatives / policies. Sub-max. 2 marks for descriptions.</p> <p>1 (named initiative / policy), e.g. World Class programme (UK); 2 (description) (Podium) supporting athletes with realistic medal-winning capabilities at the next Olympic / Paralympic Games / (Podium Potential) supporting athletes whose performances suggest that they have realistic medal-winning capabilities at the subsequent Olympic / Paralympic Games;</p> <p>3 (named initiative / policy), e.g. UK Sport Strategic Plan (UK); 4 (description) aiming for a decade of success in a wide variety of sports that involves representatives from the diverse nature of the British population;</p> <p>5 (named initiative / policy), e.g. The American Development Model / ADM (USA); 6 (description) multi-stage plan to develop the pool of elite athletes from which future US Olympians and Paralympians are selected;</p> <p>7 (named initiative / policy), e.g. Elite Athlete Development Grant Programme (USA); 8 (description) supports elite athletes to achieve their Olympic dream / provision of grant based on income thresholds and performance standards;</p> <p>9 (named initiative / policy), e.g. Athlete development framework and rider pathway (New Zealand); 10 (description) creating a legacy of high-performance riders in a variety of cycling events;</p> <p>11 (named initiative / policy), e.g. High performance sport New Zealand (New Zealand); 12 (description) working in partnership with National Sporting Organisations (NSOs) to improve the performance of elite athletes;</p> <p>Accept any other relevant policy / initiative and description.</p>	<b>4</b>

**PUBLISHED**

Question	Answer	Marks
3(c)	5 marks for any 5 of:  Accept appropriate explanations of: 1 improved (physical) health / fitness; 2 improved mental health; 3 improved social health; 4 become more skilful / knowledgeable; 5 provide enjoyment / fun / intrinsic value; 6 achieve satisfaction of success / strive to achieve high standards / personal challenge of competition; 7 possibility of earning a living / potential for career; 8 opportunities to receive fame / praise / medals / status; 9 keep out of trouble / provide a hobby; 10 (socialisation) learning cultural values, e.g. values / norms of society / ethics;	<b>5</b>
3(d)	4 marks for any 4 of:  1 run by (local) government; 2 trading at set prices / pre-set budget; 3 subsidised by (council) taxes; 4 relatively inexpensive / cheap; 5 for anybody / open to all / mass participation; 6 facilities / equipment often basic; 7 some are moving towards private management; 8 can be 'pay as you go' / not necessarily subscription-based;	<b>4</b>
3(e)	3 marks for any 3 of:  1 influence can be both positive and negative / can lead to participating or not participating; 2 family / parents often provide <b>initial interest</b> in physical activity / foundation level; 3 'primary socialisation'; 4 funding / equipment provided by family; 5 provide transport to the activity; 6 availability of time; 7 sibling rivalry; 8 emotional support; 9 effects of culture / religion of the family;	<b>3</b>

**PUBLISHED**

Question	Answer	Marks
3(f)	<p>5 marks for any 5 of:</p> <p>beneficial</p> <ol style="list-style-type: none"> <li>1 increased income for the sport (from sponsorship / sales / television rights etc.);</li> <li>2 money to provide better facilities / equipment / training / coaches / research / talent-identification programmes;</li> <li>3 money for improved technology;</li> <li>4 money used to increase in number of / more spectacular events / competitions;</li> <li>5 improved performances;</li> <li>6 increased number of spectators;</li> <li>7 increased publicity for the sport;</li> <li>8 increased participation in the sport;</li> </ol> <p>not beneficial</p> <ol style="list-style-type: none"> <li>9 over-reliance on money as (main form of) income;</li> <li>10 sport loses control / TV dictates schedule / organisation of events;</li> <li>11 corporate hospitality taking tickets;</li> <li>12 rules / format altered;</li> <li>13 not all sports benefit / money mainly goes to popular sports;</li> <li>14 increase in deviant behaviour / cheating / doping / violent play;</li> </ol>	<b>5</b>