



Cambridge International AS & A Level

PHYSICAL EDUCATION

9396/33

Paper 3

October/November 2021

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

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: 1 ATP/PC system OR lactic system; 2 anaerobic / no oxygen; 3 phosphocreatine / PC is broken down to produce energy OR $PC \rightarrow P + C + \text{energy}$; 4 energy is used to resynthesise ATP OR $\text{energy} + ADP + P \rightarrow ATP$; 5 (enzyme) creatine kinase; 6 (site of reaction) sarcoplasm; 7 (yield) 1 ATP per molecule of PC ;	5
1(b)	5 marks for any 5 of: 1 slow component; 2 circulatory / respiratory rates remain elevated; 3 removal of lactic acid; 4 conversion (of lactic acid) to pyruvate / H_2O / CO_2 / glucose / protein / sweat / urine; 5 takes 30 minutes to 2 hours; 6 uses aerobic system; 7 uses 5–8 litres of oxygen; 8 replenishment of glycogen stores; 9 (glycogen restoration) takes up to 48 hours;	5
1(c)	4 marks for any 4 of: 1 a form of continuous training; 2 running with changes in speed / intensity OR speed play; 3 uses both aerobic AND anaerobic activity / energy systems; 4 different terrains / hill running; 5 more than 20 minutes duration; 6 (aerobic intensity) 50–70% of max. HR; 7 (anaerobic intensity) 75–95% of max. HR;	4

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Question	Answer	Marks
1(d)	<p>5 marks for any 5 of:</p> <ol style="list-style-type: none"> 1 hypertrophy / increase in size / mass of muscle; 2 hyperplasia; 3 increased strength of ligaments / tendons / connective tissue; 4 increase in ATP / PC stores; 5 increase in glycogen stores; 6 increased tolerance to lactic acid / delayed OBLA / delayed lactate threshold; 7 quicker removal of lactic acid / improved buffering capacity; 8 increased enzyme activity; 9 increased density of / more myoglobin / mitochondria; 10 increased capillarisation; 11 increased haemocrit / haemoglobin; 12 increased bone density; <p>Accept other appropriate physiological adaptations.</p>	5
1(e)	<p>2 marks for any 2 of:</p> <ol style="list-style-type: none"> 1 type of joint; 2 length / elasticity of muscle / ligaments / tendons / skin / connective tissue; 3 shape of bones (at joint) / joint structure / depth of joint socket; 4 (temperature) warm muscles are more flexible; 5 (age) flexibility decreases as age increases; 6 (gender) females tend to be more flexible; 7 (injury) muscle / joint injuries tend to reduce flexibility; 8 (training) stretching / flexibility training improves flexibility; 9 muscle / fat bulk can restrict flexibility; 10 (hormones) oestrogen increases flexibility; 	2
1(f)(i)	<p>1 mark for:</p> <ol style="list-style-type: none"> 1 the rate at which an object covers a set distance / distance ÷ time / how quickly a body / body parts can move; 	1

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Question	Answer	Marks															
1(f)(ii)	<p>3 marks for 3 of:</p> <table border="1" data-bbox="338 284 1816 611"> <thead> <tr> <th data-bbox="338 284 589 347">(method)</th> <th data-bbox="589 284 1214 347">(sprint)</th> <th data-bbox="1214 284 1816 347">(plate tapping)</th> </tr> </thead> <tbody> <tr> <td data-bbox="338 347 589 411">1 (name)</td> <td data-bbox="589 347 1214 411">5–100 m sprint / dash;</td> <td data-bbox="1214 347 1816 411">plate-tapping test;</td> </tr> <tr> <td data-bbox="338 411 589 475">2 (description)</td> <td data-bbox="589 411 1214 475">run as quickly as possible over set distance;</td> <td data-bbox="1214 411 1816 475">tap alternate plates as quickly as possible;</td> </tr> <tr> <td data-bbox="338 475 589 539">3 (measure)</td> <td colspan="2" data-bbox="589 475 1816 539">timed / in seconds;</td> </tr> <tr> <td data-bbox="338 539 589 611">4 (evaluation)</td> <td colspan="2" data-bbox="589 539 1816 611">result compared to (standardised) table / norms;</td> </tr> </tbody> </table> <p>Accept other recognised methods.</p>	(method)	(sprint)	(plate tapping)	1 (name)	5–100 m sprint / dash;	plate-tapping test;	2 (description)	run as quickly as possible over set distance;	tap alternate plates as quickly as possible ;	3 (measure)	timed / in seconds;		4 (evaluation)	result compared to (standardised) table / norms;		3
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1(g)(i)	<p>1 mark for:</p> <p>1 <u>static AND dynamic</u>;</p>	1															
1(g)(ii)	<p>4 marks for any 4 of:</p> <p>1 (mesocycle) 1–4 months;</p> <p>2 more than 20 minutes per session / at least 2 times per week;</p> <p>3 (named exercises) e.g. one-legged balance / plank / downward dog;</p> <p>4 (equipment) e.g. use of balance board / swiss ball / exercise ball;</p> <p>5 improve core stability / core muscles;</p> <p>6 named test of balance to measure progress;</p> <p>7 example of progression / overload during programme / increase time spent on an exercise;</p>	4															

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Question	Answer	Marks
2(a)(i)	3 marks for: 1 (cognitive) belief / knowledge about an attitude object OR e.g. knowing that exercise is good for you; 2 (affective) emotions / feelings about an attitude object OR e.g. I like football; 3 (behavioural) actions / how you respond to an attitude object OR e.g. I go jogging every week;	3
2(a)(ii)	4 marks for any 4 of: Max. 3 marks if no example used. 1 create conflict between components; 2 change one element of triadic model ; 3 change cognitive component, e.g. show that fitness training is good for you / can improve health / sport performance; 4 change affective / emotional component, e.g. make fitness training fun / enjoyable; 5 change behavioural component, e.g. punish negative attitude to fitness work OR insist on / reward positive attitude to training; 6 natural response is to reduce conflict between components / need for consonance;	4
2(b)	3 marks for any 3 of: 1 combination of trait AND social learning theories; 2 inherited characteristics AND environmental influences; 3 behaviour changes depending on the specific situation; 4 e.g. laid-back approach in friendly match changes to autocratic style in an important cup game; 5 Lewin / Hollander / core, typical responses, role-related behaviour;	3
2(c)	3 marks for: Max. 2 marks if no example used. 1 (specific) goal must relate to the performer / sport / event / position / fitness component, e.g. basketball player wants to improve leg power to jump higher / rebound better; 2 (realistic) goal must be attainable / within reach (to maintain motivation), e.g. reduce 100-metre sprint PB by 0.2 seconds; 3 (exciting) goal must be stimulating / challenging / enjoyable (to maintain motivation), e.g. achieve qualifying time for national swimming championships;	3

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Question	Answer		Marks												
2(d)	2 marks for any 2 of: <table border="1" data-bbox="338 284 1935 580"> <thead> <tr> <th></th> <th>trait sports confidence</th> <th>state sports confidence</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>stable / innate / enduring</td> <td>temporary / changeable;</td> </tr> <tr> <td>2</td> <td>same in all situations / global</td> <td>depends on the situation / environment / specific;</td> </tr> <tr> <td>3</td> <td>e.g. footballer will be confident in all aspects of the game / naturally confident</td> <td>e.g. footballer may be confident playing game but not taking a penalty;</td> </tr> </tbody> </table>			trait sports confidence	state sports confidence	1	stable / innate / enduring	temporary / changeable;	2	same in all situations / global	depends on the situation / environment / specific;	3	e.g. footballer will be confident in all aspects of the game / naturally confident	e.g. footballer may be confident playing game but not taking a penalty;	2
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2(e)	2 marks for: A practical example must be used for each mark. <ol style="list-style-type: none"> 1 (vicarious experiences) modelling / seeing someone of similar ability perform a somersault on a trampoline successfully; 2 (performance accomplishments) previous success scoring free throws in basketball OR experience / mastery of similar skills, e.g. can serve in tennis so transfer to volleyball serve; 		2												
2(f)	4 marks for: Answers must use a sporting example for each mark. <ol style="list-style-type: none"> 1 broad AND lots of cues, e.g. footballer scanning field to assess passing options; 2 narrow AND few cues, e.g. basketball player taking a free-throw shot; 3 internal AND cues from within performer, e.g. gymnast mentally rehearsing a floor routine; 4 external AND cues from environment, e.g. fielder focusing on the ball as it comes towards them; 5 broad-external AND many cues from environment, e.g. footballer scanning field to assess passing options; 6 broad-internal AND thinking about many cues, e.g. rugby player thinking about all the set plays he is involved in; 7 narrow-external AND few cues from environment, e.g. golfer hitting a drive off the tee; 8 narrow-internal AND thinking about a few cues, e.g. netball player thinking about their shooting technique; 		4												

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Question	Answer	Marks
2(g)	4 marks for any 4 of: 1 somatic technique; 2 measure physical responses; 3 (example) heart rate / respiration rate / muscle tension / sweating; 4 provides objective data; 5 performer learns to relax / uses other relaxation techniques / helps voluntary control of bodily functions; 6 (equipment) shows effectiveness of relaxation technique; 7 raises confidence that relaxation techniques work; 8 gives an awareness of level of arousal needed for success;	4
2(h)	5 marks for any 5 of: 1 nature of game / contact sport (aggressive) cues present; 2 frustration / poor performance / losing; 3 poor refereeing decisions / fouls by opponent not penalised; 4 previous experience / scores to settle from past encounter; 5 verbal / physical abuse from opponent / retaliation; 6 hostile crowd / proximity of crowd; 7 rivalry / local derby; 8 very high arousal levels; 9 importance of event; 10 pressure from significant others, e.g. coach; 11 emotional / off-the-pitch issues / use of drugs; 12 instinct / innate / genetic / trait; 13 social learning / copying role models;	5

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Question	Answer	Marks
3(a)	4 marks for any 4 of: 1 athletes compete irrespective of colour / race / creed / political belief / combat discrimination; 2 promotion of international understanding / promote unity; 3 appreciation of cultural diversity; 4 supreme mental / physical challenge; 5 fair play / sportsmanship; 6 peace / harmony / cooperation; 7 encourage mass participation in sport; 8 education for the youth of the world;	4
3(b)	3 marks for: 1 (venue) Olympia; 2 (frequency) every 4 years; 3 (duration) 5 days;	3
3(c)	5 marks for any 5 of: 1 boycotts in protest at actions of other countries; 2 terrorism to protest against perceived injustice / promote a political ideology / e.g. killing of Israeli athletes / Atlanta bombing; 3 protests by individuals / e.g. black power salute; 4 propaganda to promote a political ideology / enhance national prestige / nationalism / athletes as pawns; 5 nations banned / e.g. South Africa due to apartheid; 6 non-recognition of nations / e.g. China refusing to recognise Taiwan;	5
3(d)	4 marks for any 4 of: 1 funding / focus is on high-level sport / the best performers; 2 win-at-all costs ethic / Lombardian ethic; 3 talent-identification programmes; 4 pathways to excellence / scholarships; 5 reduce / cut funding to sports / individuals unlikely to podium; 6 employ best coaches / support staff / physiotherapists; 7 provide access to best facilities;	4

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Question	Answer	Marks
3(e)	<p>5 marks for 5 of:</p> <p>(amateurism sub-max. 3 marks)</p> <ol style="list-style-type: none"> 1 competing for the love of the sport / no monetary reward; 2 seen as a noble concept / upper class / gentleman amateur; 3 influence of Pierre de Coubertin / Avery Brundage; 4 used to exclude working-class athletes; 5 working class unable to afford time off work / expenses needed; 6 belief that working class had no concept of fair-play values; 7 participation more important than winning; 8 all-rounders more highly regarded than specialists; <p>(transition to professionalism)</p> <ol style="list-style-type: none"> 9 growth of 'shamateurism' / 'shamateurs' / abuse of amateur ideal; 10 'broken time' payments / payments given for time off work to compete; 11 scholarships / sponsorships / armed forces (ways used by countries to fund athletes without losing amateur status); 12 lack of policy from IOC / rules gradually relaxed; 13 need for best athletes competing / necessary for success; 14 'amateur' removed from Olympic charter; 	5
3(f)	<p>4 marks for any 4 of:</p> <ol style="list-style-type: none"> 1 large numbers of wounded / disabled young men; 2 Ludwig Guttmann (fled Germany to England); 3 set up Stoke Mandeville Games; 4 ... became the Paralympic Games; 5 rehabilitation of injured veterans / civilians through sport; 6 build self-confidence / self-respect through sport; 7 ex-soldiers put on a display of disabled sport at 1948 London Olympic Games; 	4

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Question	Answer	Marks
3(g)	5 marks for any 5 of: 1 build more muscle; 2 increase alertness; 3 reduce fatigue; 4 reduce anxiety; 5 lose weight; 6 hide presence of other drugs; 7 mask pain / allow you to compete while injured; 8 recover from injury quicker / train harder; 9 increase red blood cells / haemocrit / haemoglobin; 10 belief that others are taking drugs; 11 only way to compete at highest level; 12 granted a TUE (therapeutic use exemption) / taken to prevent (underlying) health issues; 13 achieve financial gain / fame; 14 pressure from peers / coach / media / win-at-all-costs ethic; 15 misleading information / lack of knowledge; 16 easily accessible / cheap;	5