Cambridge Assessment International Education

Cambridge International AS & A Level

PHYSICAL EDUCATION **9396/32**

Paper 3 **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.

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.

Question	Answer	Marks
1(a)	6 mark for any 6 of: 1 Krebs / citric acid cycle; 2 acetyl coenzyme A (enters cycle); 3 combines with oxaloacetic acid to form citric acid; 4 (several reactions occur) to recreate oxaloacetic acid; 5 (net yield of) 2 ATP; 6 CO_2 is produced; 7 hydrogen (atoms) are removed; 8 in matrix (of mitochondria); 9 electron transport / transfer chain; 10 (hydrogen) is carried by hydrogen carriers / hydrogen acceptors; 11 e.g. by NAD (NADH) / FAD ($FADH_2$); 12 in cristae / inner membranes (of mitochondria); 13 hydrogen is split into a proton / H^+ and an electron; 14 (net yield) 30–38 ATP / large amounts of ATP; 15 (hydrogen) combines with oxygen to produce H_2O;	**6**
1(b)(i)	2 marks for: 1 **high-intensity** exercise has been performed **OR** ATP-PC system has been used up; 2 example of **high-intensity** exercise with implied **duration of more 5 seconds**, e.g. 100-metre sprint / long jump / 50-metre swim;	**2**
1(b)(ii)	2 marks for any 2 of: 1 replenishment of myoglobin (stores); 2 with oxygen; 3 takes (about) 1 minute **OR** 0.5 litres of oxygen;	**2**
1(b)(iii)	1 mark for: 1 2–4 minutes (accept any value within this range, e.g. 180 seconds);	**1**

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th></tr>
<tr><td>1(c)(i)</td><td>2 marks for any 2 of:

1 type of joint;
2 shape of bones (at joint);
3 length / elasticity of muscle;
4 length of connective tissue / ligaments / tendons OR elasticity of skin;
5 temperature of muscles;
6 an injury to the joint / muscle affects flexibility (can increase or decrease range of motion);
7 muscle bulk / fat bulk / body composition / obesity;
8 flexibility training;</td><td>2</td></tr>
<tr><td>1(c)(ii)</td><td>4 marks for any 4 of:

<table>
<tr><td>1 (name)</td><td>sit and reach test;</td><td>goniometer / goniometry;</td></tr>
<tr><td>2 (description)</td><td>sit on floor, legs straight, feet against box / bench;</td><td>fulcrum / pivot / head of goniometer is placed at joint (axis of rotation);</td></tr>
<tr><td>3 (description)</td><td>reach forward as far as possible (with arms straight);</td><td>arms of goniometer align with bones / limbs;</td></tr>
<tr><td>4 (score / result)</td><td>hold position (for 2 seconds) AND record score / distance reached;</td><td>record angle in degrees shown (on goniometer);</td></tr>
<tr><td>5 (evaluation)</td><td>compare score to (normative) tables / data;</td><td>compare angle to (normative) tables / data;</td></tr>
</table>

Credit other recognised methods of evaluating static flexibility.</td><td>4</td></tr>
</table>

Question	Answer	Marks
1(c)(iii)	5 marks for any 5 of: 1 warm up / pulse raiser; 2 one named / described stretching exercise, e.g. touch toes; 3 second named / described stretching exercise, e.g. calf stretch; 4 move joint just beyond point of resistance; 5 hold stretch for at least 6 seconds; 6 stretches should be repeated; 7 stretches can be active or passive **OR** use a partner / resistance;	**5**
1(d)	3 marks for: 1 (agility) the ability to **change direction quickly**; 2 (speed) the ability to **move** (body / body parts) **quickly**; 3 (balance) the ability to maintain the centre of gravity within the base of support **OR** the ability to maintain equilibrium **OR** the ability to stay upright; Credit other suitable descriptions of each fitness component.	**3**
1(e)	5 marks for any 5 of: (positives) 1 increased muscle mass **OR** reduce fat; 2 increased strength / speed / power; 3 able to train at higher intensities; 4 faster recovery / injuries heal quicker / train more often; (negatives) 5 irritability / aggression / mood swings / 'roid rage'; 6 liver / kidney damage / cancers / heart failure / CHD / strokes / blood clots; 7 hormonal disturbances **OR** females acquire masculine characteristics **OR** testicular atrophy in males; 8 (use in sport is) illegal / banned / prohibited; 9 infections from the use of needles;	**5**

Question	Answer	Marks
2(a)(i)	3 marks for any 3 of: 1 (traits are) innate / inherited / genetic / born with / from parents; 2 (traits are) predictable; 3 (traits are) enduring; 4 (traits are) pre-determined / not learned / generalised; 5 (personality) can be measured / tested; 6 Cattell / Eysenck / Freud;	**3**
2(a)(ii)	4 marks for any 4 of: 1 credulous approach; 2 most elite sports performers share certain traits / have similar personalities; 3 behaviour may be predicted; 4 sceptical approach; 5 results of profiling do not relate to sporting performance **OR** lack of ecological validity; 6 people act differently in different situations; 7 behaviour changes if being observed / judged / profiled; 8 people lie **OR** give answers that put them in a good light; 9 people misunderstand questions **OR** people find it hard to self-assess; 10 results are subjective **OR** results can be interpreted differently by different people **OR** may lead to stereotyping; 11 answers can be influenced by performer's previous experiences of profiling **OR** by performer's mood / external influences on performer;	**4**
2(b)	4 marks for: 1 (social loafing) loss of motivation **OR** lack of effort / not trying (by an individual); 2 (example) hockey player is not tracking back; 3 (Ringelmann effect) loss of coordination **OR** timing is wrong **OR** reduced (individual) effort **as group size increases**; 4 (example) tug-of-war team does not exert same force as sum of each performer's force capability **OR** rugby move breaks down as a player runs the wrong line;	**4**

Question	Answer	Marks
2(c)	3 marks for any 3 of: 1 leadership is learned through socialisation / environmental influences; 2 copying / imitating / modelling others; 3 leadership skills must be reinforced (by others); 4 more likely if person copied is high status / significant other / successful / role model; 5 more likely if person copied is similar age / gender / culture; 6 more likely if person copied is seen live;	**3**
2(d)	3 marks for any 3 of: 1 **not realistic** / **achievable** as sprinter is very unlikely to reduce best time by 1.00 seconds **OR** too demanding; 2 **not time-phased** / time-bound as there is no timescale set for it to be reached; 3 goal has **not been agreed** by athlete **OR** no discussion between athlete and coach; 4 **not recorded** as there is no evidence that goal has been recorded; 5 **not exciting** as a goal it does not include evidence of reward;	**3**

Question	Answer	Marks
2(e)	6 marks for: Any two of these techniques. 1 imagery; 2 imagine yourself in a calm place; 3 avoiding the stress of performance **OR** practical example; 4 visualisation; 5 form mental images of **previous** success; 6 create the feeling / kinaesthesis / sensations of performing well **OR** practical example; 7 mental rehearsal; 8 thinking about a **future** performance; 9 stimulates neural commands / motor programmes **OR** practical example; 10 (positive) self-talk; 11 use when negative thoughts occur; 12 replace negatives with positive statements about performance **OR** practical example; 13 thought stopping; 14 use of cues / words / actions; 15 to re-direct attention to positive thoughts **OR** practical example; 16 rational / positive thinking; 17 challenge negative thoughts with reasoned arguments; 18 create opportunities rather than distractions **OR** practical example; Accept other appropriate descriptions of cognitive techniques.	**6**

Question	Answer	Marks
2(f)	1 mark for: 1 increase in arousal; 4 marks for any 4 of: 2 increased likelihood of dominant response; 3 social facilitation; 4 social inhibition; 5 high ability / autonomous perform better **OR** low ability / cognitive perform worse; 6 extroverts tend to perform better **OR** introverts tend to perform worse; 7 gross / simple skills performed better **OR** fine / complex skills performed worse; 8 evaluation apprehension may enhance / impair performance; 9 distraction effect may impair performance; 10 homefield advantage (phenomenon) may enhance / impair performance; 11 (effect on performance) depends on type of audience;	**5**
2(g)	2 marks for: 1 assertive behaviour / intent to hurt that is **within the rules** / laws; 2 (example) a forceful tackle in rugby;	**2**

Question	Answer	Marks
3(a)	5 marks for any 5 of: 1 every 4 years / Olympiad; 2 Olympia / in Greece; 3 oath / opening ceremony; 4 (Olympic) flame; 5 (named event), e.g. athletics / wrestling / boxing / pankration / hoplite race / chariot races; 6 5-day duration; 7 males / Greek citizens only **OR** women banned; 8 competitors were naked; 9 religious ceremony / festival nature / cultural event / music / dancing / poetry; 10 (compulsory) training period; 11 wreaths as prizes / prize-giving ceremony / banquet / feast; 12 severe punishments / flogging / banishment for rule-breaking;	**5**
3(b)	5 marks for any 5 of: 1 ensure Olympic Games takes place **regularly** / **every 4 years OR** manage bidding process to host Games; 2 promote peace / harmony through sport; 3 education of youth through sport; 4 promote women in sport (at all levels); 5 lead the fight against doping in sport; 6 encourage development of sport for all; 7 promote health of athletes; 8 promote a positive legacy to host cities / countries; 9 act against any form of discrimination (affecting Olympic movement) **OR** promote cultural diversity; 10 encourage concern for environmental issues **OR** promote sustainable development in sport; 11 support initiatives linking sport and culture; 12 support International Olympic Academy / IOA;	**5**

Question	Answer	Marks
3(c)	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 Aryan race / master-race ethic; 4 policy of non-selection of Jewish athletes for Germany **OR** one (token) Jewish athlete selected; 5 games were extremely well organised; 6 Olympic film produced as propaganda;	**3**
3(d)	4 marks for any 4 of: 1 (sale of) TV rights; 2 sponsorship / marketing; 3 **donations** from private corporations; 4 government subsidies; 5 lottery funding; 6 taxation / increased taxes (at local or national level); 7 sales of merchandise; 8 IOC gives grants / loans; 9 revenue from (operating facilities as) training sites; 10 use of foreign exchange reserves;	**4**
3(e)	4 marks for any 4 of: 1 loss of income; 2 training expenses / facility hire; 3 employment of coach / science support staff; 4 living expenses / food / accommodation; 5 travel; 6 kit / equipment;	**4**

Question	Answer	Marks
3(f)	5 marks for any 5 of: 1 facilities available for use by local population; 2 improved infrastructure **OR** improved transport links; 3 Olympic village available for housing; 4 increased participation **OR** health benefits from participation; 5 increased tourism; 6 national pride / feel-good factor / brings people together **OR** volunteering creates wider community involvement; 7 educational programmes **OR** disability / cultural awareness; 8 employment opportunities; 9 sustainability / environmental issues addressed; 10 skills acquired used for further development;	**5**
3(g)	4 marks for any 4 of: 1 rehabilitation / the relevance of the Second World War; 2 morale-boosting effects; 3 changing attitudes to participation; 4 importance of Stoke Mandeville Hospital / Stoke Mandeville Games; 5 impact of Guttmann; 6 development of new technology; 7 creation of new / adapted sports; 8 legislation / anti-discrimination / to reduce stereotyping / prejudice; 9 development of classification system; 10 role models / increased media coverage; 11 held in same city / stadium as Olympics;	**4**