Cambridge Assessment International Education

Cambridge International AS & A Level

PHYSICAL EDUCATION **9396/32**

Paper 3 **May/June 2023**

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 2023 series for most Cambridge IGCSE, Cambridge International A and AS Level and Cambridge Pre-U components, and some Cambridge O Level components.

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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)	4 marks for any 4 of: 1 **coupled** reactions; 2 (exothermic reaction) breaking down ATP releases **energy**; 3 ATP → ADP + P + **energy**; 4 (endothermic reaction) resynthesising ATP takes in **energy**; 5 **energy** + ADP + P → ATP; Accept alternative wording.	**4**
1(b)	2 marks for: 1 H_2O / water; 2 CO_2 / carbon dioxide;	**2**
1(c)(i)	2 marks for: 1 the relative importance / contribution of energy **systems** (to an activity) **OR** the predominant energy **system** used (during an activity); 2 dependent on intensity **AND** duration (of activity);	**2**
1(c)(ii)	1 mark for: 1 e.g. running a marathon **AND** sprinting 100 metres; Accept any predominantly aerobic activity / skill with any predominantly anaerobic activity / skill.	**1**

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th></tr>
<tr><td>1(c)(iii)</td><td>3 marks for any 3 of:

<table><tr><td></td><td>aerobic end because:</td><td>anaerobic end because:</td></tr><tr><td>1</td><td>low intensity;</td><td>high intensity;</td></tr><tr><td>2</td><td>long duration;</td><td>short duration;</td></tr><tr><td>3</td><td>oxygen available;</td><td>lack of oxygen;</td></tr><tr><td>4</td><td>fats and carbohydrates available as fuel;</td><td>phosphocreatine / PC available as fuel;</td></tr></table>
Answers may explain that their chosen activity is aerobic or anaerobic. Answers must be in context.</td><td>3</td></tr>
<tr><td>1(d)</td><td>3 marks for any 3 of:

1 specificity AND training must be relevant to the activity AND, e.g. a sprinter works on their leg muscles;
2 progression AND gradually increase the workload over time AND, e.g. maximum of 10% increase in weight training resistance OR increase the weight from 50 kg to 55 kg;
3 reversibility AND adaptations to training will be lost if training stops / training must be maintained AND, e.g. a dancer who stops stretching regularly loses flexibility;
4 moderation AND avoid overtraining / avoid overuse injuries AND, e.g. a marathon runner should include rest days in their programme;
5 variance AND different training methods must be included to avoid boredom / injury / plateau AND, e.g. change weight training exercises / programme after 6 weeks;

Accept other suitable descriptions of practical examples.</td><td>3</td></tr>
</table>

Question	Answer	Marks
1(e)	4 marks for any 4 of: 1 **maintains elevated** respiratory / circulatory rates **OR maintains** venous return **OR gradually** decreases heart rate / breathing rate; 2 **gradually** decreases body / muscle temperature; 3 **flushes** muscles with oxygenated blood; 4 **speeds up** recovery; 5 **speeds up** removal of lactic acid / CO_2; 6 **reduces** the risk of muscle soreness / DOMS; 7 **reduces** the risk of blood pooling; 8 **gradually** reduces blood pressure **OR prevents** sudden drop in blood pressure / lightheaded feeling / fainting / nausea;	**4**
1(f)	6 marks for: 1 (age) VO_2 max (naturally) declines in adulthood; 2 **due to** less efficient cardiovascular / respiratory system **OR** less elastic heart / blood vessel / alveolar walls; 3 (sex) females tend to have lower VO_2 max; 4 **due to** higher body fat / less efficient cardiovascular / respiratory system / smaller heart / stroke volume / cardiac output; 5 (physiological make up) physiological factors / genetics may **enhance** / **inhibit** VO_2 max; 6 **due to** muscle fibre mix **OR** capillarisation **OR** size of heart **OR** size of lungs **OR** mitochondria / myoglobin; Accept reference to differences in other anatomical features in correct context for point 6.	**6**
1(g)	5 marks for any 5 of: 1 hypertrophy / increase in size / mass of muscle; 2 hyperplasia **OR** more muscle fibres; 3 stronger / more elastic tendons; 4 increased size / density of mitochondria; 5 increased stores of myoglobin; 6 increased stores of glycogen; 7 increased stores of triglycerides / FFAs / fats **OR** increase in fat metabolism; 8 fast oxidative muscle fibres become more aerobic; 9 increased / more **oxidative** / **aerobic** enzymes; 10 (increased) capillarisation (at the muscles);	**5**

Question	Answer	Marks
2(a)	4 marks for 4 of: 1 trait (perspective); 2 personality traits are innate / stable / enduring / generalised / predictable; 3 social learning (perspective); 4 personality is based on environmental influences / copying others / reinforcement; 5 interactionist (approach); 6 personality is made up of a combination of innate traits and social learning **OR** traits interact with situational / environmental influences;	**4**
2(b)(i)	4 marks for: 1 (cognitive) **belief** / **knowledge** about an attitude object; 2 e.g. thinking that exercise is good for you; 3 (affective) **emotions** / **feelings** about an attitude object; 4 e.g. I enjoy playing football;	**4**
2(b)(ii)	4 marks for: 1 (persuader) coach must be high status / role model then more likely to change; 2 (recipient) coach must make sure that performer wants to change / performer's mood state must be positive; 3 (message) message from coach must be clear / informative / accurate; 4 (situation) coach must make sure that timing / context / one-to-one situation allows recipient to take in information **OR** if others around are supporting the message the performer is more likely to change;	**4**
2(c)(i)	3 marks for any 3 of: 1 task-oriented **AND** person-oriented leadership styles; 2 effectiveness of leadership style depends on the **favourableness** of the situation; 3 favourableness depends on relationship between leader and group / ability / motivation of group / task structure / leader's position of authority; 4 **task-oriented** leader is more effective in **very** / **most favourable** situations; 5 **task-oriented** leader is more effective in **unfavourable** / **least favourable** situations; 6 **person-oriented** leader is more effective in **moderately favourable** situations;	**3**

Question	Answer	Marks
2(c)(ii)	4 marks for any 4 of: 1 motivates individuals to perform better **OR** gets the best out of performers; 2 improves confidence of performers; 3 increases cohesion in team / group; 4 appropriate goals are set **OR** task is clear to group; 5 correct decisions are made; 6 develops good discipline in the group; 7 sets high standards for the group; 8 increases enjoyment / satisfaction of individuals;	**4**
2(d)(i)	2 marks for: 1 (performance) e.g. a sprinter may set a goal to achieve the qualifying time for the 100-metre sprint; 2 (process) e.g. a sprinter may set a goal of improving sprint start / dip for the line;	**2**
2(d)(ii)	1 mark for: 1 (short-term goals) are specific **OR** manageable **OR** measurable **OR** break down longer / more general goals **OR** are stepping stones to long-term success **OR** maintain focus / concentration **OR** give **quick** feedback **OR** reduce / manage anxiety;	**1**
2(e)	3 marks for any 3 of: 1 a somatic technique; 2 performer tenses **AND** relaxes (specific) muscles; 3 performed periphery to core / out to in / top to bottom / bottom to top; 4 performers (learn to) recognise tension in muscles; 5 … so that they can **actively** relax tense muscles;	**3**

Question	Answer	Marks
2(f)	5 marks for any 5 of: 1 win-at-all-costs attitude; 2 nature of game / contact sport / (aggressive) cues present; 3 poor refereeing decisions **OR** fouls by opponent not penalised; 4 previous experience / scores to settle from past encounter; 5 verbal / physical abuse from opponent / gamesmanship / retaliation; 6 hostile crowd / proximity of crowd; 7 rivalry / local derby; 8 importance of event; 9 overarousal / very high arousal levels; 10 pressure from significant others, e.g. coach; 11 social learning / **copying** role models; 12 emotional / off-the-pitch issues; 13 instinct / innate / genetic / trait; 14 use of drugs;	**5**

Question	Answer	Marks
3(a)	3 marks for any 3 of: 1 foot race / running / sprinting; 2 one length of the stadion; 3 192 metres; 4 naked men only; 5 starting blocks / starting structure (set into ground); 6 Olympiad named after winner; 7 false starts punished (by whipping); Credit other suitable points.	**3**

Question	Answer	Marks
3(b)	6 marks for any 6 of: 1 promote peace / harmony; 2 promote ethics of sport / fair play / sportsmanship; 3 ensure Olympic Games takes place regularly; 4 provide funding for Games; 5 manage bidding process to host Games; 6 decide which events / sports are included in the Games; 7 support education of youth through sport; 8 promote women in sport (at all levels) / gender equality; 9 lead the fight against doping in sport; 10 encourage development of sport for all / mass participation; 11 oppose any political / commercial abuse of sport / athletes **OR** promote health / safety of athletes; 12 promote a positive legacy to host cities / countries; 13 encourage concern for environmental issues **OR** promote sustainable development in sport; 14 support initiatives linking sport and culture; 15 support International Olympic Academy / IOA; 16 oversee sponsorship programme / The Olympic Partner (TOP) programme;	**6**
3(c)	3 marks for any 3 of: 1 Soviet Union; 2 and other Communist / Eastern Bloc countries; 3 tit for tat / retaliation for 1980 boycott; 4 disagreed with USA promotion of western political ideals / commercialism / liberalism / conservatism; 5 concerns about safety of Soviet athletes **OR** protests against Soviet athletes; 6 concerns about a stricter doping testing regime;	**3**

Question	Answer	Marks
3(d)	6 marks for any 6 of: 1 build world class sporting facilities / stadia; 2 improve infrastructure / transport links; 3 build Olympic village; 4 build hotels / accommodation for tourists; 5 increase security; 6 use of cheap labour; 7 access sources of funding; 8 relocation of population; 9 address environmental issues; 10 recruitment of volunteers **OR** employment of support workers; 11 marketing / advertising / generating support for Games; 12 plan opening / closing ceremonies; Accept other relevant suggestions.	**6**
3(e)	4 marks for any 4 of: 1 competing against the best in the world / intensity of competition; 2 supreme mental / physical challenge / pushing achievements of body to limits; 3 experiencing / mixing with other cultures / sports / expanding horizon; 4 spiritual aspect / bravery of competition; 5 honour of winning medal / performing at one's best; 6 opening / closing ceremony; 7 high media profile **OR** opportunities for financial gain;	**4**

Question	Answer	Marks
3(f)	4 marks for any 4 of: 1 got paid to play sport; 2 got paid for time off work / broken time payments; 3 received prize money; 4 received money for endorsements / sponsorship; 5 received 'free' kit / equipment / luxury goods; 6 received travel / accommodation / subsistence support; 7 used a **professional** coach; 8 received employment in an occupation where most time is spent training / doing sport, e.g. army / police; 9 competed with professionals;	**4**
3(g)	4 marks for any 4 of: 1 no women's participation in 1896; 2 limited involvement / some participation in 1900 (tennis, golf); 3 low numbers of participants (less than 10%) before Second World War; 4 role of Alice Milliat **OR** Women's Olympics created in response to IOC refusal to allow women's athletics in 1920 / 1924; 5 growth of mixed-gender events; 6 (now) all sports / events **should** have a male and female equivalent; 7 (2021) (slightly) lower numbers of female athletes than men **OR** almost equal rates of participation; 8 IOC Women in Sport Commission / Gender Equality Forum; 9 Paris 2024 IOC target of (exactly) 50% male and female participation; 10 some countries still deny opportunities for women to participate; Credit other changing roles of women as athletes.	**4**