Cambridge Assessment International Education

Cambridge International AS & A Level

PHYSICAL EDUCATION **9396/33**

Paper 3 **May/June 2020**

MARK SCHEME

Maximum Mark: 90

Published

Students did not sit exam papers in the June 2020 series due to the Covid-19 global pandemic.

This mark scheme is published to support teachers and students and should be read together with the question paper. It shows the requirements of the exam. The answer column of the mark scheme shows the proposed basis on which Examiners would award marks for this exam. Where appropriate, this column also provides the most likely acceptable alternative responses expected from students. Examiners usually review the mark scheme after they have seen student responses and update the mark scheme if appropriate. In the June series, Examiners were unable to consider the acceptability of alternative responses, as there were no student responses to consider.

Mark schemes should usually be read together with the Principal Examiner Report for Teachers. However, because students did not sit exam papers, there is no Principal Examiner Report for Teachers for the June 2020 series.

Cambridge International will not enter into discussions about these mark schemes.

Cambridge International is publishing the mark schemes for the June 2020 series for most Cambridge IGCSE™ and Cambridge International A & AS Level components, and some Cambridge O Level components.

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)	3 marks for: 1 potential energy; 2 chemical energy / ATP; 3 kinetic / mechanical energy; *Accept: heat / thermal / electrical / elastic / sound energy.*	**3**
1(b)	4 marks for any 4 of: 1 only usable form of energy in body **OR** energy currency of body; 2 high-energy phosphate compound / molecule **OR** high-energy bonds **OR** potential energy; 3 phosphate bond / ATP is broken to release energy **OR** ATP → ADP + P + energy; 4 ATP is resynthesised; 5 coupled reaction **OR** combination of endothermic **AND** exothermic reactions;	**4**
1(c)	3 marks for any 3 of: (sub-max. 1 if no example from a game used) 1 performer will switch from **aerobic to anaerobic** if intensity too high, e.g. steady pace during hockey match, then sprint for ball **OR** performer will switch from **anaerobic to aerobic** if intensity drops, e.g. intense tennis rally at end of game followed by break to change ends; 2 **threshold** between energy systems is crossed, e.g. after 10 seconds of sprinting in rugby; 3 ATP / PC → LA system, e.g. after 10 seconds of press in basketball; 4 ATP / PC → aerobic, e.g. sprint at start of football match followed by running at steady pace; 5 aerobic → LA system, e.g. gradually increasing speed in last minutes of close game of basketball; 6 aerobic → ATP / PC, e.g. sudden sprint for ball from kick-off in football; 7 LA → ATP / PC, e.g. long sprint followed by jump to head a ball; 8 LA → aerobic, e.g. long sprint followed by a walk as ball is out of play;	**3**
1(d)(i)	1 mark for: 1 returning body to pre-exercise state **OR** removing waste products **AND** replenishing stores used during exercise;	**1**

Question	Answer	Marks
1(d)(ii)	3 marks for any 3 of: 1 use of warm up to reduce oxygen deficit / DOMS / delay OBLA; 2 allow 24–48 hours between high-intensity sessions; 3 high-intensity training will increase LA tolerance / speed up LA removal / delay OBLA **OR** will speed up recovery process; 4 low-intensity training will increase aerobic capacity / efficiency **OR** increase oxygen delivery; 5 use of correct work:relief ratios; 6 work:relief ratio of 1:3+ will give time for alactacid debt recovery; 7 work:relief ratio of 1:2 for lactacid debt recovery;	**3**
1(d)(iii)	4 marks for any 4 of: 1 maintains elevated respiratory / circulatory rates **OR** maintains venous return; 2 flushes muscles with oxygenated blood; 3 speeds up removal of lactic acid; 4 prevents muscle soreness / DOMS; 5 prevents blood pooling; 6 prevents sudden drop in blood pressure / lightheaded feeling / nausea; 7 allows more frequent training sessions / shorter rest periods between sessions;	**4**
1(e)	4 marks for any 4 of: 1 amount of training / lifestyle / body composition / drugs; 2 physiological make-up / genetics; 3 muscular factors **OR** muscle fibre types **OR** number of mitochondria / myoglobin; 4 cardiovascular factors **OR** strength of heart **OR** capillarisation **OR** amount of haemoglobin; 5 respiratory factors **OR** size of lungs **OR** strength of respiratory muscles; 6 gender; 7 age; 8 environment / altitude;	**4**

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th></tr>
<tr><td>1(f)(i)</td><td>3 marks for:

<table>
<tr><td>1</td><td>hydrostatic weighing;</td><td>bioelectrical impedance or body fat scales;</td><td>skin fold test;</td><td>body mass index / BMI;</td><td>bod pod;</td></tr>
<tr><td>2</td><td>body fully submerged in water;</td><td>low electric current through body;</td><td>use of skin fold <u>calipers</u>;</td><td>mass and height measured;</td><td>subject sits in egg shaped pod;</td></tr>
<tr><td>3</td><td>water displacement measured or difference between weight on land and in water;</td><td>fat impedes flow of current or stronger current;</td><td>various body sites are measured and compared to tables / norms;</td><td>mass ÷ (height)^2 gives score;</td><td>air displacement measured or difference between air volume empty and with subject inside;</td></tr>
</table></td><td>3</td></tr>
<tr><td>1(f)(ii)</td><td>5 marks for any 5 of:

1 increase energy expenditure;
2 aerobic exercise OR use large muscle groups;
3 low-impact exercise / swimming / cycling / walking / rowing OR high-intensity interval training / HIIT;
4 intensity of 50–80% max HR OR 40–75% VO_2 max;
5 duration 20–60 minutes;
6 frequency 2–5 times a week;</td><td>5</td></tr>
</table>

Question	Answer	Marks
2(a)	2 marks for any 2 of: 1 more relaxed; 2 less competitive; 3 delegate easily; 4 low levels of stress / anxiety; 5 work at a slower pace **OR** less keen to get work done quickly; 6 tolerant / methodical;	**2**
2(b)(i)	4 marks for any 4 of: 1 socialisation / social learning; 2 family / friends / peers; 3 association / significant others / role models / coaches / teachers; 4 media; 5 culture / religion / socioeconomic background; 6 experience / conditioning;	**4**
2(b)(ii)	3 marks for any 3 of: (sub-max. 1 if no links made to fitness training) 1 change one element of triadic model; 2 change cognitive component / belief **OR** show that training is good for you / can improve health / fitness; 3 change affective / emotional component **OR** make training fun / enjoyable; 4 change behavioural component **OR** punish negative attitude **OR** insist on positive attitude; 5 create conflict between components; 6 use attribution retraining;	**3**
2(c)(i)	3 marks for any 3 of: 1 (also known as) trait theory / Great Man theory; 2 leaders have common / universal personality / behaviour characteristics; 3 leaders have (relatively) stable / enduring characteristics; 4 innate physical attributes, e.g. height / weight / good-looking; 5 innate personality traits, e.g. intelligence / self-confidence / empathy; 6 authoritarian approach / goal-directed;	**3**

Question	Answer	Marks
2(c)(ii)	2 marks for any 2 of: 1 emergent come from within the group **AND** prescribed (can be) from outside group; 2 emergent chosen / supported by group **AND** prescribed are imposed by a higher authority; 3 emergent knows / understands the (personalities of) members of group **AND** prescribed will not know / understand the group members;	**2**
2(d)	4 marks for any 4 of: 1 causality refers to internal **AND** external factors; 2 stability refers to stable **AND** unstable factors; 3 ability is a stable internal factor; 4 task difficulty is a stable external factor; 5 effort is an unstable internal factor; 6 luck is an unstable external factor;	**4**
2(e)(i)	5 marks for any 5 of: 1 anxiety can be cognitive or somatic; 2 refers to **state** anxiety; 3 cognitive anxiety refers to negative thoughts / beliefs / psychological reactions **OR** can affect concentration **OR** is influenced by expectation of success; 4 cognitive anxiety changes depending on the situation during performance; 5 somatic anxiety is caused by physiological reactions, e.g. sweating / butterflies in stomach; 6 competitive anxiety refers to anxiety within sport; 7 as cognitive anxiety increases, performance decreases (or opp.); 8 cognitive anxiety occurs earlier than somatic anxiety (in build-up to game); 9 somatic anxiety increases to an optimal level, and further increases reduce performance; 10 elite performers can control anxiety better during performance;	**5**

Question	Answer	Marks
2(e)(ii)	4 marks for any 4 of: 1 performer tenses **AND** then relaxes specific muscles; 2 performer learns to recognise tension in muscles; 3 … so that they can actively relax tense muscles; 4 … leading to a totally relaxed state / set of muscles; 5 a somatic technique; 6 with practice PMR can become a very quick process **OR** use of trigger controls; 7 can be done before, after or during breaks in a game; 8 ideally should be performed in appropriate conditions, e.g. quiet / subdued lighting / lying down / loose clothing; 9 performed periphery to core / out to in / top to bottom / bottom to top;	**4**
2(f)	3 marks for: (sub-max. 1 if no practical examples used) 1 (measurable) the goal / outcome must be a value that can be measured compared to a previous value, e.g. perform 100-m sprint in 10.2 seconds; 2 (realistic) the goal must be achievable / within the capability of the performer, e.g. achieve 10.2 seconds for 100-m sprint when previous PB is 10.3 seconds; 3 (time-phased) the time to achieve the goal must be stated, e.g. achieve new PB of 10.2 seconds in 6-weeks time;	**3**

Question	Answer	Marks
3(a)	3 marks for any 3 of: 1 not allowed to compete; 2 married women not allowed to attend stadium / spectate / coach; 3 single women were allowed to spectate; 4 priestess (of temple of Demetra) allowed; 5 women had separate Games;	**3**
3(b)	3 marks for any 3 of: 1 black power salute / clenched fist; 2 protest against racial discrimination; 3 on victory podium **OR** during medal ceremony **OR** during national anthem; 4 wore black glove on fist; 5 also took off shoes (before mounting podium); 6 wore black socks **OR** Smith wore black scarf;	**3**
3(c)	5 marks for any 5 of: 1 elitist system **OR** focus is on high-level sport **OR** only high-level sport has high status; 2 win-at-all costs ethic / Lombardian ethic; 3 high school / college system / pathway to excellence; 4 familiarisation with high number of spectators at high school / college; 5 scholarship system (to university / college); 6 importance of success in Olympic trials; 7 limited / some funding from US Olympic Committee; 8 minimal government involvement; 9 rags to riches / American Dream **OR** belief that anyone can achieve success; 10 all sports entered / contested; 11 (best) coaches recruited from all over the world; 12 Title IX aimed to raise female participation **OR** equal opportunities for males and females;	**5**

Question	Answer	Marks
3(d)	3 marks for any 3 of: 1 provision of sporting facilities / stadia; 2 improving infrastructure / transport systems; 3 provision of housing / hotels / Olympic village; 4 relocation of local population; 5 security costs;	**3**
3(e)	4 marks for any 4 of: 1 harsh / strict punishments / bans / medals stripped; 2 WADA oversees drug testing; 3 (WADA) set up / funded by IOC **OR** increase funding to WADA; 4 research to stay ahead of chemists producing new drugs **OR** regular update of banned list of drugs; 5 biological passports; 6 whereabouts system **OR** athletes must be available for testing all year round **OR** random / out of competition testing; 7 keep blood / urine samples and retest for several years after event; 8 educate athletes about ethics / dangers / risks of doping **OR** use positive role models **OR** name and shame;	**4**
3(f)	4 marks for any 4 of: 1 train harder / build more muscle / to be stronger / faster / more stamina; 2 increase alertness / reduce fatigue / reduce anxiety; 3 lose weight **OR** hide presence of other drugs; 4 mask pain / recover from injury quicker; 5 increase red blood cells / haemocrit / haemoglobin; 6 belief that others are taking drugs; 7 only way to compete at highest level **OR** level playing field; 8 granted a TUE (Therapeutic Use Exemption) / prevent health issues if taken; 9 achieve financial gain; 10 pressure from peers / coach / media; 11 misleading information / lack of knowledge;	**4**

Question	Answer	Marks
3(g)	3 marks for any 3 of: 1 playing for the love of sport; 2 no monetary gain; 3 good sportsmanship / fair play / spirit of the game; 4 social class / upper class distinction; 5 not allowed to train / have a coach;	**3**
3(h)	(arguments for dropping team sports) 1 tradition – 1896 Athens had no team sports; 2 dropping team sports would significantly reduce number of participants; 3 cap on numbers of participants set by IOC is being ignored; 4 OG becoming too big / has too many sports; 5 drop team sports if Olympics is not the pinnacle of achievement, e.g. football; 6 many team sports do not fit motto (citius, altius, fortius); 7 some team sports are dominated by highly-paid professionals; (arguments against dropping team sports) 8 impact on careers of team performers who have trained / invested their future in reaching Olympics; 9 team sports bring huge income to Olympics; 10 team sports are very popular / raise media profile of Games or raise participation in sport (an Olympic aim); 11 some team sports only get media coverage at Olympics, e.g. rowing; 12 many team sports were part of early C20 Olympics; 13 team sports reflect many of the social values of Olympism; 14 other sports are more worthy of being cut **OR** cut subjectively judged sports;	**5**