Cambridge Assessment International Education

Cambridge International AS & A Level

PHYSICAL EDUCATION **9396/13**

Paper 1 **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)	4 marks for any 4 of: 1 flexion – decrease angle between bones / hand moving forwards in anatomical position; 2 extension – increase in angle between bones / hand moving backwards in anatomical position; 3 pronation – palm down / posterior; 4 supination – palm up / anterior; 5 abduction – away from midline / towards thumb-side when palm facing forward; 6 adduction – towards midline / little finger-side when palm facing forward; *Movement must be identified and described for credit.*	**4**
1(b)	5 marks for: *Note: only credit 'isotonic' once.* 1 flexion; 2 rectus femoris / vastus lateralis / vastus intermedius / vastus medialis; 3 eccentric / isotonic; 4 extension; 5 concentric / isotonic;	**5**

Question	Answer	Marks
1(c)(i)	6 marks for 6 of: before exercise: 1 release of adrenaline; 2 anticipatory rise; during exercise – (sub-max. 3 marks for receptors / points 3–6) 3 chemoreceptors detect increases in acidity / equivalent; 4 baroreceptors detect increases in (systolic) blood pressure; 5 thermoreceptors detect increases in temperature; 6 mechanoreceptors/proprioceptors detect increases in movement; (sub-max. 4 marks points 7–11) 7 controlled by cardiac control centre / in medulla; 8 decreased parasympathetic impulses; 9 increased sympathetic impulses; 10 releasing (nor)adrenaline; 11 acts on SA / sinoatrial node / SAN;	**6**
1(c)(ii)	2 marks for: 1 heart rate – number of beats / contractions per minute; 2 stroke volume – volume / amount of blood leaving ventricle / heart per beat;	**2**
1(c)(iii)	1 mark for: 1 cardiac output = heart rate × stroke volume / Q = HR $\times$ SV;	**1**

Question	Answer	Marks
1(d)	4 marks for 4 of: (sub-max. 3 marks) 1 during exercise, cardiac output increases; 2 because of increase in heart rate / stroke volume; 3 also (total) peripheral resistance / friction decreases; 4 because arterioles serving working muscles open / dilate; (sub-max. 3 marks) 5 results in increased in systolic blood pressure; 6 little / no change in diastolic blood pressure; 7 more muscles used / more active – the less the increase in blood pressure; 8 isometric / static / slow activities / e.g. weight lifting cause greater increase in blood pressure in both systolic and diastolic values;	**4**
1(e)(i)	3 marks for any 3 of: 1 alveoli provide the lungs with large surface area for diffusion; 2 large blood supply / large capillary network; 3 thin / semi-permeable membrane / wall for diffusion / one cell thick; 4 short pathway / distance for diffusion; 5 (gases dissolve in) layer of moisture in alveoli; 6 tiny diameter of capillaries – red blood cells deformed to increase contact area / slow blood flow / transit time;	**3**
1(e)(ii)	2 marks for: 1 high partial pressure of oxygen in alveoli **AND** low partial pressure of oxygen in capillaries / partial pressure of oxygen higher in alveoli / lower in capillaries; 2 diffusion occurs from area of high partial pressure / concentration to area of low partial pressure / concentration;	**2**

Question	Answer	Marks
1(f)	3 marks for any 3 of: 1 lower partial pressure of oxygen / pO_2 / less oxygen at altitude; 2 reduced pressure / diffusion gradient in lungs / equivalent; 3 gas exchange more difficult / less effective; 4 reduced partial pressure of oxygen in (arterial) blood; 5 less oxygen binds to haemoglobin / not as fully saturated; 6 less oxygen delivered to muscles; 7 carbon dioxide builds up at faster rate; 8 reduced (aerobic) performance in endurance events;	**3**

Question	Answer	Marks
2(a)	4 marks for 4 of: (sub-max. 1 mark) 1 example of fundamental motor skill, i.e. running, jumping, kicking, catching, throwing, etc; (sub-max. 3 marks) 2 exposure to activities / more skills practised in childhood then more likely for learning to take place; 3 availability of / time to practice; 4 role models / significant others / family / parents may be copied; 5 enough money / finances to learn motor skills in certain activities; 6 access to facilities / equipment; 7 example of cultural / social influences affecting development;	**4**
2(b)(i)	4 marks for any 4 of: 1 learn by watching / copying; 2 attention – focus on / highlight key areas of skill / attractive to learner; 3 retention – performer must be able to remember the information to reproduce / produce mental image; 4 motor reproduction – physically able to perform the skill; 5 motivation – performer's drive / desire / rewards;	**4**

Question	Answer	Marks
2(b)(ii)	3 marks for any 3 of: 1 ensure observer is watching / concentrating; 2 highlight cues / key areas of skill; 3 attractive to learner / role model / significant other; 4 accurate / perfect performance; 5 demonstrate slowly / repeatedly / break down into parts; 6 use of different viewing angles; 7 include verbal guidance; 8 encourage creation of mental image;	**3**
2(c)	3 marks for 3 of: 1 example – complex skill made up of parts – e.g. high jump made-up of run-up, take-off, flight and landing or equivalent; (sub-max. 2 marks) 2 series of sub-routines; 3 generalised series of movements / set of neural commands; 4 completed in the correct sequence / order; 5 effector mechanism / nerve impulses to muscles; 6 stored in long-term memory; 7 run from short-term memory; 8 well-learned sub-routines become subconscious / relegated for new skill to be developed;	**3**
2(d)	4 marks for any 4 of: 1 involves / time for feedback; 2 adjust / modify performance; 3 movements initiated by a motor programme / memory trace; 4 perceptual trace controls movement; 5 this control is internal / involves proprioceptors / kinesthesis; 6 comparison of perceptual and memory trace; 7 if traces different – adjustments made to movement / corrections / if traces match movement continues; 8 comparison of outcome **AND** performance (to achieve model of correctness);	**4**

Question	Answer	Marks
2(e)(i)	3 marks for: 1 (reaction time) – time taken from presentation of the stimulus to the start of the movement / time taken to decide the shot / equivalent; 2 (movement time) – time taken from the initiation / start of movement to completion / end of movement / time from end of reaction / decision to end of movement / equivalent; 3 (response time) – time taken from initiation / start of signal / stimulus to end of movement / reaction time + movement time;	**3**
2(e)(ii)	4 marks for any 4 of: 1 more stimuli / more alternative responses / more decisions to be made / open / complex / externally-paced skills; 2 psychological refractory period / single channel hypothesis; 3 distractions / inability to selectively attend / focus; 4 aging / senses deteriorating; 5 gender – females (tend to have) slower reaction time; 6 low level of personal fitness / ill-health / injury / longer neural pathways / height; 7 lack of experience / absence of suitable motor programmes / low level of skill / ability; 8 relevant environmental factors – poor weather / extreme temperature; 9 consumption of alcohol / drugs / medication; 10 lack of (recent) sleep / low level of arousal / anxiety; 11 type of stimulus – dull / quiet / indistinct;	**4**
2(f)	5 marks for any 5 of: 1 limited capacity / 7 $\pm$ 2 items; 2 limited duration / seconds; 3 working memory / decision making; 4 information enters from short term sensory store / STSS; 5 only selectively attended items enter; 6 transfers to long term memory / LTM; 7 if not practised / reinforced then lost; 8 retrieves information from long term memory / LTM; 9 memory trace / schema / motor programme; 10 sends motor programme to effector mechanism;	**5**

Question	Answer	Marks
3(a)(i)	4 marks for any 4 of: 1 spontaneous / for everyone; 2 fun / enjoyment / non-serious; 3 non-productive / result unimportant; 4 childlike activity; 5 freedom of choice; 6 freedom of time; 7 choice of space; 8 no pre-determined rules; 9 intrinsic value / self-fulfilling; 10 negotiated involvement / ending;	**4**
3(a)(ii)	4 marks for any 4 of: sport has / play doesn't have: 1 extrinsic rewards / winners and losers; 2 competition / leagues / cups; 3 commitment / effort / training / practices; 4 complex / defined rules; 5 highly structured / organised / time constraints / boundaries; 6 prescribed / standardised kit / equipment; 7 officials / referees / judges; 8 tactics used / skills required;	**4**

Question	Answer	Marks
3(b)	5 marks for any 5 of: 1 talent-identification programmes / talent spotting / regional scouts; 2 attract funding / sponsorship / scholarship / media income / TV deals / athlete (personal) performance award / prize / appearance money / etc.; 3 high-quality facilities / centres of excellence; 4 support – sport science / medical / psychological support / physiotherapy / nutritional advice / biomechanics / etc.; 5 structured levels of competition; 6 coaching structure / high-quality coaching; 7 structured progression route / development squads / training camps; 8 coordinated approach from sporting authorities / whole sport plans / etc.; 9 education and career support / athlete career education / etc.;	**5**
3(c)	4 marks for any 4 of: 1 change attitudes to women's sport / break myths and stereotypes; 2 provide suitable facilities and times for women's sport / more clubs; 3 governing bodies to give more funding for the development of women's sport; 4 encourage families to promote sport for women / cultural recognition by organisations; 5 increase prize money in major events to match that of men / recognition via awards; 6 school programmes need to create a good image for girls; 7 governing bodies to encourage more women administrators and coaches; 8 offer social and recreational experiences; 9 equal opportunities acts (and similar) in place;	**4**

Question	Answer	Marks
3(d)	4 marks for any 4 of: 1 stereotyping / labelling by society / looked down on; 2 discrimination; 3 lack of access / transport; 4 poor self-image; 5 lack of personal / disposable income / lack of funding from external sources / costs of equipment; 6 safety concerns; 7 lack of specialist coaches; 8 lack of specialist facilities within venue; 9 fewer competitions / clubs / teams / opportunities; 10 lack of role models; 11 lack of suitable / specialised equipment; 12 some sports / activities not available / difficult to adapt; 13 some disabilities too severe to allow participation;	**4**
3(e)	5 marks for any 5 of: *Accept other relevant examples.* 1 governments have sport departments / provide funding for sport; 2 political situations affect sport, e.g. Soviet invasion of Afghanistan led to Moscow 1980 Olympic boycotts / Apartheid / etc; 3 sporting situation affects politics, e.g. Honduras vs. El Salvador football match / countries kept apart in cup draws because of politics, e.g. Russia and Georgia, Spain and Gibraltar; 4 government legislation affects sport, e.g. banning of blood sports / spectator safety / drugs made illegal; 5 propaganda, e.g. 1936 Berlin Olympics; 6 city bids, e.g. governments have to back a bid due to massive costs; 7 athlete power, e.g. 1968 Black power salute; 8 sport as a vehicle of social control, e.g. communist regimes / sport as 'character building'; 9 terrorism, e.g. Munich 1972 / Atlanta 1996; 10 government policies, e.g. regeneration of 'brown' areas / infrastructure / sport for all influencing sports provision; 11 inequality permitted – racism / sexism / disability; 12 education – compulsory PE programmes; 13 NFL – 'take a knee' protest / anti-racism campaigns;	**5**

Question	Answer	Marks
3(f)	4 marks for any 4 of: 1 win at all costs / Lombardian ethic / means more money / fame; 2 pressure to win from coaches / peer group / fans / media / sponsors; 3 frustration / poor refereeing / losing / playing badly / opponents; 4 increase in cheating / provocation from opposition / retaliation; 5 increased arousal / drugs; 6 level of importance of event – local derby / 'big match'; 7 nature of sport – contact / use of weapons; 8 instinct theory / cathartic release of aggression;	**4**