Cambridge Assessment International Education

Cambridge International AS & A Level

PHYSICAL EDUCATION **9396/12**

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)	5 marks for: *Credit isotonic only once.* 1 flexion; 2 triceps brachii; 3 eccentric / isotonic; 4 extension; 5 concentric / isotonic;	**5**
1(b)	3 marks for: 1 fast glycolytic fibres – high speed of contraction; 2 fast glycolytic fibres – high force production / powerful contraction; 3 fast oxidative glycolytic fibres – resistant to fatigue / able to use both aerobic and anaerobic energy systems;	**3**
1(c)	5 marks for any 5 of: 1 detection by chemo- / baro- / proprio- / thermo- / mechanoreceptors; 2 controlled by medulla / cardiac control centre; 3 sympathetic pathway increases heart rate; 4 by release of adrenaline / noradrenaline; 5 increases stroke volume / ejection fraction; 6 parasympathetic pathway decreases heart rate; 7 via vagus nerve / vagal tone; 8 production of acetylcholine; 9 (both) act on sinoatrial node / SA node / SAN;	**5**
1(d)(i)	1 mark for: 1 venous return increases during exercise;	**1**

Question	Answer	Marks
1(d)(ii)	3 marks for any 3 of: *Factor identified and effect explained.* 1 valves – prevent backflow of blood / in veins; 2 (skeletal) muscle pump – skeletal muscles contract and relax compressing veins to squeeze blood back to the heart; 3 smooth muscle in veins / venous tone – contract to squeeze blood back to the heart; 4 respiratory pump – pressure changes in the thorax compress the veins forcing blood towards the heart; 5 gravity – forces blood from upper part of body into the (superior vena cava) / heart; 6 suction pump (of heart) – contraction creates negative pressure gradient which 'sucks' blood into the heart;	**3**
1(e)	3 marks for 3 of: oxygen 1 combines with haemoglobin / forms oxyhaemoglobin; 2 dissolved / equivalent in blood plasma; carbon dioxide – (sub-max. 2 marks) 3 carried as bicarbonate / hydrogen carbonate ions / carbonic acid; 4 dissolved / equivalent in blood plasma; 5 combined / attached to plasma proteins / haemoglobin / forms carbaminohaemoglobin;	**3**
1(f)	6 marks for: 1 (minute ventilation) – volume of air inspired / expired / exchanged per minute / tidal volume x breathing rate; 2 (large) increase during exercise; 3 (residual volume) – volume of air left in the lungs after maximal expiration; 4 stays the same / unchanged; 5 (inspiratory reserve volume) – extra volume of air available to breathe in; 6 decreases during exercise;	**6**

Question	Answer	Marks
1(g)	4 marks for any 4 of: 1 lower partial pressure of oxygen in atmosphere / less oxygen available at altitude; 2 reduction in the pressure / diffusion gradient in lungs; 3 gaseous exchange more difficult / less effective; 4 reduced partial pressure oxygen in the (arterial) blood; 5 less oxygen binds to haemoglobin / lower saturation; 6 not as much oxygen delivered to working muscles; 7 carbon dioxide builds up at faster rate; 8 reduced performance for endurance events;	**4**

Question	Answer	Marks
2(a)	3 marks for any 3 of: 1 efficient / economic; 2 goal directed; 3 follows technical model; 4 fluent / smooth; 5 aesthetically pleasing; 6 consistently successful; 7 **observes** learning has occurred;	**3**
2(b)	3 marks for: 1 closed – unchanging / stable environment / few decisions **OR** open – changing / different environment / make adjustments; 2 discrete – clear beginning and end **OR** serial – putting consists of preparation, backstroke, contact and follow-through; 3 internally-paced – performer decides when to start / how fast to perform / hit ball **OR** externally-paced because can be punished for slow play;	**3**

Question	Answer	Marks
2(c)	3 marks for any 3 of: *(No practical example – max. 2 marks.)* 1 motor ability named, e.g. strength / speed / **OR** stated – abilities innate / genetic; 2 needed as foundation / basis to build skill learning / building block, e.g. you need coordination before learning a catch in cricket; 3 fundamental motor skill named, e.g. running / catching / throwing / kicking; 4 needs practice / repetition / reinforcement of movement to help skill learning; 5 this gets refined / adapted / more complex through teaching / coaching; 6 becomes complex skill;	**3**
2(d)	3 marks for any 3 of: 1 insight learning / Gestaltist / discovery learning; 2 involves thinking about the solution to a problem; 3 performer develops understanding of / solution to the problem / requirements of skill / eureka moment; 4 awareness of link between sub-routines / understand / recognise relationship between stimulus and response / learner draws together many variables; 5 modify / adjust actions based on previous experience / environment / intrinsic feedback; 6 performer experiences the whole movement / wholeness / holistic (not just sub-routines);	**3**

Question	Answer	Marks
2(e)	6 marks for 6 of: theory (sub-max. 4 marks) 1 aim to develop / strengthen the stimulus–response (S/R) bond; 2 trial and error learning / practice; 3 shaping; 4 change / modify environment to change behaviour; 5 reinforcement strengthens the S/R bond; 6 positive reinforcement – creates positive feelings / praise / reward / satisfier observing target being hit / etc; 7 negative reinforcement – withdrawal of an adverse stimulus / coach stops shouting; 8 punishment / annoyance weakens the S/R bond; 9 physical / mental preparedness strengthens S/R bond; benefits (sub-max. 3 marks) 10 performers develop specific skills through practise; 11 coach can control the training session / set goals / targets; 12 specific game-related practices can be developed; 13 use of reinforcement / success to increase motivation; 14 modifying the environment helps success to be achieved;	**6**
2(f)	3 marks for any 3 of: 1 recall – prior to performance; 2 initiates movement / provides motor programme; 3 knowledge of initial / environmental conditions; 4 what is required to perform skill; 5 knowledge of response specifications / response / movement demands; 6 what is expected to happen;	**3**

Question	Answer	Marks
2(g)	5 marks for any 5 of: 1 involves 3 parts – short-term sensory store (STSS), short-term memory (STM) and long-term memory (LTM); 2 STSS – receives information from the display / environment; 3 lost after second or so; 4 STSS – selective attention occurs / important information is filtered in / irrelevant information is filtered out / information to STM; 5 STM **–** 'working memory' / organises or chunks information; 6 limited capacity / limited duration; 7 STM – encodes information to LTM; 8 STM runs motor programmes; 9 LTM – stores or remembers information or patterns of movement / motor programmes; 10 unlimited capacity; 11 decodes information (to STM) / DCR process; 12 memory process affects or influences perception / helps judge or interpret what needs to be done (to perform or learn the movement);	**5**
2(h)	4 marks for: 1 proactive – practising one skill can help the performance of a skill in the future; 2 suitable practical example, e.g. learning an over arm throw of a ball could help with the action of a tennis serve; 3 retroactive – practising one skill can help the performance of another previously learned skill; 4 suitable practical example, e.g. throwing a football into play could improve your lineout throwing in rugby;	**4**

Question	Answer	Marks
3(a)(i)	3 marks for any 3 of: 1 pupil learns to appreciate the natural environment; 2 teaches conservation / respect for the countryside / safety in the natural environment; 3 gives excitement / adventure and risk / adrenaline rush; 4 improves health and fitness; 5 cathartic / fun / enjoyment / 'recreating'; 6 learn motor / survival / decision-making skills; 7 teaches self-reliance / know your own personal limits / self-awareness; 8 teaches value of teamwork / trust in others / socialising / working with others; 9 places the individual in challenging situations; 10 competition is against the rock wall etc. / elements rather than another person / team; 11 life-long learning / career / qualifications;	**3**
3(a)(ii)	4 marks for 4 of: real risk (sub-max. 2 marks) 1 risk / danger from activity / injury / from environment / objective; 2 e.g. fall from the rock / capsize / rock fall / flooding / weather / tides / currents / rapids; 3 planned for, e.g. weather forecast / route planning / risk assessment / observation; perceived risk (sub-max. 2 marks) 4 think of the risk / fear / worry / subjective / controlled / safety / limited; 5 e.g. may fall / scared of heights / weak swimmer / harness for rock climbing / wearing life jacket; 6 causes excitement / adrenaline / used as a learning experience through planning;	**4**
3(b)(i)	4 marks for any 4 of: *Country must be identified or max. 3 marks.* 1 central (lottery) / governmental funding; 2 sponsorship; 3 appearance money; 4 prize money; 5 grants / scholarships / NGB funding; 6 parental support;	**4**

Question	Answer	Marks
3(b)(ii)	4 marks for any 4 of: 1 increase in national prestige / feel-good factor; 2 hosting or success – advertisement for the country; 3 hosting – improvements in trade / economy / tourism; 4 hosting – improve infrastructure, i.e. better roads / hotels / transport; 5 hosting – provision of sporting facilities / legacy; 6 demand from population for national success / opportunity to host; 7 confirmation of political superiority / popularity; 8 to enable individuals to succeed / reach goals; 9 encourage / increase participation / role models / general health; 10 keep out of trouble / hobby;	**4**
3(c)(i)	5 marks for any 5 of: 1 improved (physical) health and fitness; 2 improved mental health; 3 become skilful / knowledgeable; 4 enjoyment / fun / intrinsic; 5 achieve satisfaction of success / strive to achieve high standards / self-esteem; 6 personal challenge of competition; 7 improved social health / socialising / be part of a team / learn life skills, e.g. leadership; 8 possibility of earning a living / career; 9 fame / praise / medals / status; 10 keep out of trouble / hobby; 11 socialisation – learning cultural values, e.g. values / ethics;	**5**

Question	Answer	Marks
3(c)(ii)	6 marks for any 6 of: *Factor must be named / identified and explained for credit.* 1 socioeconomics – access to money / disposable income / transport; 2 available leisure time / holidays; 3 availability of clubs / facilities; 4 access to coaching; 5 parents / peers / friends / family influence (positive or negative); 6 race / religion / cultural / issues / holy days / dress codes; 7 previous experience / via school PE programme / previous success in similar sports; 8 discrimination can limit involvement; 9 media coverage / societies image / role models / health awareness; 10 age – may limit involvement – too old / young; 11 gender – some activities single sex / limited to certain genders; 12 disability – some activities limited availability; 13 status of country – sports participation unavailable / limited;	**6**
3(d)	4 marks for 4 of: beneficial (sub-max. 3 marks) 1 increased income / money / wages / prize money / extrinsic rewards / sponsorship / professional contracts; 2 money used to provide better facilities / coaches / equipment / training support / research / talent-identification programme; 3 performers able to train full time / improved performances; 4 performers become well known / role models / super stars; not beneficial (sub-max. 3 marks) 6 greater pressure / expectation / need for performers to win; 7 increase in deviant behaviour / cheating / doping / violent play; 8 more competitions / matches – danger of overuse injuries / shortened career; 9 having to use specified (poorer) equipment; 10 sponsors demands / intrusion / lack of training time; 11 changes to sport requires adjustments / changes to training; 12 post-retirement depression;	**4**