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**PHYSICAL EDUCATION**

**9396/12**

Paper 1

**October/November 2016**

MARK SCHEME

Maximum Mark: 90

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**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 will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the October/November 2016 series for most Cambridge IGCSE<sup>®</sup>, Cambridge International A and AS Level components and some Cambridge O Level components.

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	<b>Cambridge International AS/A Level – October/November 2016</b>	<b>9396</b>	<b>12</b>

<b>Question</b>	<b>Answer</b>	<b>Marks</b>
<b>Section A</b>		
1(a)	4 types for 2 marks, 2 or 3 types for 1 mark: <ol style="list-style-type: none"> <li>1. flexion;</li> <li>2. extension;</li> <li>3. adduction;</li> <li>4. abduction;</li> <li>5. rotation;</li> <li>6. circumduction;</li> </ol>	<b>2</b>
1(b)	<ol style="list-style-type: none"> <li>1. concentric/isotonic;</li> <li>2. rectus femoris;</li> <li>3. vastus lateralis /vastus medialis /vastus intermedius; (2 and 3 in any order)</li> <li>4. extension;</li> <li>5. gluteus maximus;</li> </ol>	<b>5</b>
1(c)(i)	4 marks for any 4 of: <ol style="list-style-type: none"> <li>1. blood enters atria during (atrial) diastole;</li> <li>2. because ventricular pressure is lower than atrial pressure (ventricular diastole);</li> <li>3. atrioventricular /tricuspid /bicuspid valves are open;</li> <li>4. atria contract / (atrial) systole and blood flows from atria to ventricles;</li> <li>5. ventricles contract (ventricular) systole;</li> <li>6. (interventricular) pressure increases;</li> <li>7. atrioventricular /tricuspid /bicuspid valves close /semilunar valves open;</li> <li>8. blood leaves heart into the aorta /pulmonary artery;</li> <li>9. semilunar valves close;</li> </ol>	<b>4</b>
1(c)(ii)	2 marks for any 2 of: <ol style="list-style-type: none"> <li>1. diastolic phase shortens;</li> <li>2. less time for blood to fill atria;</li> <li>3. ventricular filling becomes active process;</li> <li>4. atrial systole is stronger;</li> </ol>	<b>2</b>

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<b>Question</b>	<b>Answer</b>	<b>Marks</b>
1(d)	<p>4 marks for 4 of:</p> <p>(sub-max. 2 marks)</p> <ol style="list-style-type: none"> <li>1. the skeletal / muscle / pump mechanism;</li> <li>2. contraction of skeletal muscles compresses vein walls helping to force blood back to the heart;</li> </ol> <p>(sub-max. 2 marks)</p> <ol style="list-style-type: none"> <li>3. the respiratory pump mechanism;</li> <li>4. changes in pressure in the thoracic / chest cavity put pressure on the abdominal veins helping to force blood back to the heart;</li> </ol> <p>(sub-max. 2 marks)</p> <ol style="list-style-type: none"> <li>5. venous tone;</li> <li>6. partial contraction of smooth muscle in the vein wall helps to force blood back to the heart;</li> </ol> <p>(sub-max. 2 marks)</p> <ol style="list-style-type: none"> <li>7. gravity;</li> <li>8. blood in veins above the heart helps force blood back to the heart;</li> </ol>	<b>4</b>
1(e)	<p>4 marks for any 4 of:</p> <ol style="list-style-type: none"> <li>1. vasomotor control centre / in the medulla;</li> <li>2. sympathetic nervous system;</li> <li>3. action of smooth muscle / pre-capillary sphincters;</li> <li>4. vasodilation / widening of arterioles leads to more blood going to working muscles;</li> <li>5. vasoconstriction / narrowing of arterioles;</li> <li>6. decreasing the amount of blood going to non-essential organs / e.g. gut / kidneys / inactive muscles;</li> </ol>	<b>4</b>
1(f)(i)	<p>4 marks for any 4 of:</p> <ol style="list-style-type: none"> <li>1. large cross-sectional area;</li> <li>2. allow for passage of oxygen / carbon dioxide / air;</li> <li>3. muscular walls / smooth muscle;</li> <li>4. dilate / constrict airways;</li> <li>5. ciliated epithelial cells / goblet cells / secrete mucus;</li> <li>6. remove dust / particles / pathogens / eq.;</li> <li>7. rings of cartilage;</li> <li>8. maintain passage / prevent collapse of bronchi;</li> </ol>	<b>4</b>

Page 4	Mark Scheme	Syllabus	Paper
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Question	Answer	Marks
1(f)(ii)	<p>5 marks for any 5 of:</p> <ol style="list-style-type: none"> <li>1. detect increases in blood carbon dioxide / acidity / lactic acid levels / decrease in pH / role of chemoreceptors;</li> <li>2. detect changes in temperature / role of thermoreceptors;</li> <li>3. detect decreases in blood pressure / role of baroreceptors;</li> <li>4. detect movement in muscles and need for more oxygen / role of mechanoreceptors / proprioceptors;</li> <li>5. detect inflation of the lungs / role of stretch receptors;</li> <li>6. prevent overstretching of lungs (this point linked to point 5) / Hering-Breuer reflex;</li> <li>7. <u>adrenaline</u> release increases respiration rate;</li> <li>8. information sent to the Respiratory Control Centre / medulla;</li> </ol>	<b>5</b>

Question	Answer	Marks
<b>Section B</b>		
2(a)	<p>4 marks for any 4 of:</p> <p>simple skill –</p> <ol style="list-style-type: none"> <li>one or few stimuli to process/limited information to process/one or few decisions to make/skill with few subroutines/limited cognitive demand/limited perceptual requirements/less feedback/limited decision making/one movement;</li> <li>e.g. running/sprinting/sprint start/throwing/kicking/jumping;</li> </ol> <p>complex skill –</p> <ol style="list-style-type: none"> <li>many stimuli to process/lots of information to process/many decisions to make/increased perceptual requirements/more feedback/skill with more/many subroutines/several movements;</li> <li>e.g. batting or bowling in cricket/basketball dribble/tennis serve/hitting a ball/gymnastics routine/somersault/high jump/triple jump/golf swing/receiving a ball in a game/delivering a pass in a game;</li> </ol>	<b>4</b>
2(b)(i)	<p>4 marks for 4 of:</p> <p>(max. 2 marks if no example)</p> <ol style="list-style-type: none"> <li>(negative reinforcement) when the stimulus is withdrawn when the desired response occurs;</li> <li>e.g. removal of criticism from coach when player is successful/eq.;</li> <li>(punishment) – giving a stimulus to prevent a response reoccurring/eq.;</li> <li>being shouted at/press ups/sin bin/cards/eq.;</li> </ol>	<b>4</b>
2(b)(ii)	<p>3 marks for any 3 of:</p> <ol style="list-style-type: none"> <li>praise from the coach;</li> <li>use of rewards/man of the match/other suitable example;</li> <li>increases the probability of a desired response/strengthens the S-R bond;</li> <li>success at the skill/self-satisfaction;</li> </ol>	<b>3</b>
2(b)(iii)	<p>3 marks for any 3 of:</p> <ol style="list-style-type: none"> <li>trial and error learning;</li> <li>learning depends on consequences of action;</li> <li>manipulation of the environment to get the desired action;</li> <li>shaping;</li> <li>appropriate example, e.g. target areas/lower baskets/eq.;</li> </ol>	<b>3</b>

<b>Page 6</b>	<b>Mark Scheme</b>	<b>Syllabus</b>	<b>Paper</b>
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<b>Question</b>	<b>Answer</b>	<b>Marks</b>
2(c)	<p>4 marks for 4 of:</p> <p>(max. 3 marks if no example)</p> <ol style="list-style-type: none"> <li>suitable example of skill that has time for adjustments to be made;</li> </ol> <p>(sub-max. 3 marks)</p> <ol style="list-style-type: none"> <li>involves/time for feedback (accept diagrams);</li> <li>movements initiated by a memory trace;</li> <li>this control is internal/involves proprioceptors/kinesthesia;</li> <li>information used to detect errors;</li> <li>perceptual trace;</li> <li>compared to memory trace;</li> <li>if traces match – movement continues;</li> <li>if traces different – adjustments made to movement/corrections;</li> </ol>	<b>4</b>
2(d)	<p>5 marks for any 5 of:</p> <ol style="list-style-type: none"> <li>(schema) – a set of relationships involving joint actions and muscular contractions which can be adapted to produce a movement;</li> <li>recall schema includes knowledge of initial conditions and knowledge of response specifications;</li> <li>learner takes into account the environment/display;</li> <li>learner decides what to do, e.g. I need to use both hands to dribble round the defender;</li> <li>recognition schema includes sensory consequences and movement outcomes;</li> <li>using kinaesthetic feedback/feelings/knowledge of performance to judge whether to modify the movement or to check whether it feels right;</li> <li>the player uses knowledge of results to check whether the outcome is effective;</li> </ol>	<b>5</b>
2(e)	<p>3 marks for any 3 of:</p> <p>(Allow relevant practical examples.)</p> <ol style="list-style-type: none"> <li>perception interprets or judges information;</li> <li>perception filters/selects information/enables focus/selective attention/concentration/detection of appropriate stimuli;</li> <li>perception codes information/makes sense of it to the individual;</li> <li>Detection Comparison Recognition/DCR process;</li> <li>perception includes use of the memory/experiences;</li> <li>perception uses motor programmes from LTM/recognition of appropriate movement patterns/stimuli;</li> <li>perception uses schema to refine/inform processing/makes performance effective;</li> </ol>	<b>3</b>

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<b>Question</b>	<b>Answer</b>	<b>Marks</b>
2(f)	<ol style="list-style-type: none"> <li>1. movement time – the time taken from the initiation of response to end of response / time from start to completion of the movement;</li> <li>2. e.g. swimming – executing the dive from blocks to entry into water; sprinting – pushing off blocks and starting / completing race;</li> <li>3. reaction time – time from gun / go signal to initiation of response / time to decide a response to a given stimulus / time taken from the onset of the stimulus to the beginning of the movement;</li> <li>4. e.g. hearing the command / go to making the first movement / eq.;</li> </ol>	<b>4</b>

<b>Question</b>	<b>Answer</b>	<b>Marks</b>																
<b>Section C</b>																		
3(a)	<p>4 marks for any 4 of:</p> <ol style="list-style-type: none"> <li>1. improve health / fitness;</li> <li>2. cathartic / fun / enjoyment;</li> <li>3. motor skill development;</li> <li>4. personal skill development / fulfilment / self-esteem / well-being / self-awareness / knowing strengths and weaknesses / personal limits;</li> <li>5. socialising / with others / friends;</li> <li>6. learning values / norms;</li> <li>7. lifelong learning / career / qualifications;</li> <li>8. appreciation of natural environment;</li> <li>9. appreciation of risk / adrenaline rush;</li> </ol>	<b>4</b>																
3(b)	<p>4 marks for 4 of the following, must give both sides:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%; text-align: center;">sport</th> <th style="width: 50%; text-align: center;">physical education</th> </tr> </thead> <tbody> <tr> <td>1. competitive / winners and losers / extrinsic rewards</td> <td>not necessarily</td> </tr> <tr> <td>2. not necessarily</td> <td>educational / in schools / lessons</td> </tr> <tr> <td>3. elitist / selected</td> <td>for all / everybody</td> </tr> <tr> <td>4. choice / voluntary / free-time</td> <td>compulsory</td> </tr> <tr> <td>5. aims to develop specific skills / fitness</td> <td>aims to develop motor skills / health / release stress / increase participation</td> </tr> <tr> <td>6. serious / commitment</td> <td>non-serious / fun</td> </tr> <tr> <td>7. not necessarily</td> <td>develop understanding / learning / morals / ethics / fair play</td> </tr> </tbody> </table>	sport	physical education	1. competitive / winners and losers / extrinsic rewards	not necessarily	2. not necessarily	educational / in schools / lessons	3. elitist / selected	for all / everybody	4. choice / voluntary / free-time	compulsory	5. aims to develop specific skills / fitness	aims to develop motor skills / health / release stress / increase participation	6. serious / commitment	non-serious / fun	7. not necessarily	develop understanding / learning / morals / ethics / fair play	<b>4</b>
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3(c)(i)	<p>4 marks for any 4 of:</p> <ol style="list-style-type: none"> <li>1. high standard of performance / highly skilled;</li> <li>2. few performers reach this level;</li> <li>3. many are full-time performers / professional;</li> <li>4. large spectator appeal / TV coverage / media interest;</li> <li>5. high expectations from spectators / nation;</li> <li>6. funding required to reach this level;</li> <li>7. support structures required;</li> <li>8. multi-organisational approach to develop elite performers / facilities;</li> </ol>	<b>4</b>																



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3(c)(ii)	<p>4 marks for 4 of:</p> <ol style="list-style-type: none"> <li>1. (foundation) – introduction to sport/learning basic movement skills/experiencing a variety of activities/grass-roots level/school PE programme;</li> <li>2. (participation) – regular participation/choosing certain activities/recreational level/ extra-curricular involvement;</li> <li>3. (performance) – commitment to training/improving performance/performing as well as possible;</li> <li>4. (excellence) – outstanding performance/national/international/elite level/professional approach/regional/representative level;</li> </ol>	<b>4</b>
3(c)(iii)	<p>5 marks for any 5 of:</p> <ol style="list-style-type: none"> <li>1. high skill/ability levels;</li> <li>2. fitness/eq. component;</li> <li>3. dedication to training/motivation/psychological eq.;</li> <li>4. high/specialist levels of coaching;</li> <li>5. specialist sport science support – e.g. medical/nutrition/biomechanical/psychological;</li> <li>6. high-quality facilities/specialist space/best equipment;</li> <li>7. funding/sponsorship;</li> <li>8. suitable/high-quality events/competitions;</li> <li>9. development pathway/world-class performance programme/good organisation/structure;</li> </ol>	<b>5</b>
3(d)	<p>5 marks for any 5 of:</p> <ol style="list-style-type: none"> <li>1. stereotyping/labelling by society/looked down on;</li> <li>2. discrimination;</li> <li>3. lack of access/transport;</li> <li>4. poor self-image;</li> <li>5. lack of personal/disposable income/lack of funding from external sources;</li> <li>6. safety concerns;</li> <li>7. lack of specialist coaches;</li> <li>8. lack of specialist facilities within venue;</li> <li>9. fewer competitions;</li> <li>10. lack of role models;</li> </ol>	<b>5</b>
3(e)	<p>4 marks for any 4 of:</p> <ol style="list-style-type: none"> <li>1. pressure from media/win-at-all-costs attitude;</li> <li>2. high expectation of supporters/coaches/family;</li> <li>3. financial rewards depend on result;</li> <li>4. fear of losing contract/hire and fire culture;</li> <li>5. officials decisions/frustration;</li> <li>6. retaliation due to foul play;</li> <li>7. incitement from crowd/own players;</li> <li>8. use of drugs;</li> <li>9. psychological inadequacies;</li> </ol>	<b>4</b>