
PHYSICAL EDUCATION

9396/12

Paper 1

October/November 2017

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.

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Cambridge International is publishing the mark schemes for the October/November 2017 series for most Cambridge IGCSE[®], Cambridge International A and AS Level components and some Cambridge O Level components.

Question	Answer	Marks
Section A		
1(a)	<p>4 marks for 4 of:</p> <p>(sub-max. 1 mark)</p> <p>1 shoulder – ball and socket <u>and</u> knee – hinge joint;</p> <p>(sub-max. 3 marks)</p> <p>2 shoulder – greater / knee – lesser range of movement;</p> <p>3 shoulder – moves in three planes (tri-axial) AND knee – moves in one plane (uni-axial);</p> <p>4 shoulder – flexion / extension AND abduction / adduction AND rotation / circumduction AND knee – flexion / extension;</p> <p>5 shoulder – less / knee – more stable;</p> <p>6 shoulder – stabilised by muscles AND knee – stabilised by ligaments;</p>	4
1(b)	<p>4 marks for 4 of:</p> <p>(sub-max. 2 marks)</p> <p><i>structural:</i></p> <p>1 size – small / smaller in diameter / fewer fibres per motor neurone;</p> <p>2 more myoglobin / red;</p> <p>3 more mitochondria;</p> <p>4 more fat / triglyceride stores;</p> <p>5 type of myosin ATPase (slow);</p> <p>6 high capillary density / high oxidative capacity;</p> <p>(sub-max. 2 marks)</p> <p><i>functional:</i></p> <p>7 high aerobic / low anaerobic capacity;</p> <p>8 slow contractile speed / contracts slowly;</p> <p>9 high fatigue resistance / fatigue slowly;</p> <p>10 low (motor unit) strength / less forceful contraction;</p>	4
1(c)	<p>5 marks for:</p> <p>1 concentric / isotonic;</p> <p>2 (horizontal) flexion / adduction;</p> <p>3 pectoralis major / deltoid;</p> <p>4 (internal) rotation;</p> <p>5 gluteus medius / gluteus minimus / semimembranosus / semitendinosus / gracilis;</p>	5
1(d)(i)	<p>2 marks for:</p> <p>1 increase in heart rate <u>before</u> exercise;</p> <p>2 release of (nor)adrenaline / epinephrine;</p>	2

Question	Answer	Marks
1(d)(ii)	4 marks for any 4 of: 1 chemoreceptors detect increased blood acidity / CO_2 / $[\text{H}^+]$ / decrease in pH; 2 proprioceptors / mechanoreceptors detect movement / muscular contractions; 3 baroreceptors detect a change in in blood pressure; 4 thermoreceptors detect increase in temperature; 5 information to cardiac control centre / medulla (oblongata); 6 increased nerve impulses to SA node; 7 via sympathetic nerve / cardiac accelerator nerve;	4
1(e)	3 marks for: 1 6 – increases; 2 7 – decreases; 3 8 – decreases;	3
1(f)	4 marks for any 4 of: 1 (leaving heart / left ventricle) blood pressure AND velocity high; 2 because of small cross-sectional area / large contractile force from cardiac muscle / heart beat; 3 (through arteries / arterioles / at capillaries) blood pressure AND velocity decrease; 4 because of large / increased cross-sectional area of vessels further away from heart / left ventricle; 5 because of friction between blood and blood vessel walls; 6 (returning to the heart) blood pressure continues to decrease; 7 but velocity increases due to venous return mechanism / reduced cross-sectional area in veins / venules;	4
1(g)	4 marks for any 4 of: 1 low pO_2 / less oxygen at altitude; 2 reduced diffusion gradient between alveoli / lungs and air; 3 need to increase rate / depth of breathing to compensate; 4 reduced diffusion gradient between alveoli and blood / capillaries; 5 not as much oxygen diffuses into blood / capillaries; 6 haemoglobin not as fully saturated / reduced partial pressure of oxygen in blood; 7 less oxygen delivered to muscles; 8 reduced diffusion gradient between capillaries and muscles; 9 reduced aerobic performance / quicker onset of anaerobic respiration / increased oxygen debt / increased excess post exercise oxygen consumption (EPOC);	4

Question	Answer	Marks
Section B		
2(a)	4 marks for any 4 of: 1 exposure to activities / more skills practised in childhood then more likely for learning to take place; 2 availability of (time to) practice / more time to practise; 3 role models / significant others may be copied / social learning; 4 enough money / finances to learn motor skills in certain activities; 5 access to facilities / equipment; 6 cultural / social reasons;	4
2(b)(i)	1 mark for: attention, retention, (motor) reproduction, motivation;	1
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 / demonstrator same age / gender as observer; 4 accurate / perfect performance; 5 demonstrate slowly / repeatedly / break down into parts; 6 include verbal guidance; 7 encourage creation of mental image; 8 immediate practice;	3
2(c)	4 marks for any 4 of: <i>No practical example(s) – max. 3 marks.</i> 1 programmes formed through repetition / practise / overlearning, e.g. repeat the (named) skill over and over; 2 programmes formed through association with other movements / chunking / chaining, e.g. associate tennis serve with overarm throwing / volleyball serve; 3 programmes formed though meaningfulness / need, e.g. the tennis serve is needed to play a game; 4 programmes formed through novelty / interest / uniqueness, e.g. learn a new / more advanced tennis serve / overarm serve / topspin serve; 5 programmes formed through fun / enjoyment / emotional intensity, e.g. taught enthusiastically / made competitive; 6 (positive) reinforcement / rewards / encouragement / feedback helps to build programmes, e.g. praised for being correct; 7 provide demonstration / mental image / break skill down; 8 programmes are stored / encoded in long-term memory;	4

Question	Answer	Marks
2(d)(i)	2 marks for any 2 of: 1 select relevant information / focus on important cues; 2 filter out irrelevant information; 3 receives information from short-term sensory store / display; 4 sends information to short-term memory; 5 speeds up decision-making process; 6 avoids information overload;	2
2(d)(ii)	3 marks for any 3 of: 1 <u>relevant</u> / <u>OWTTE</u> practice / learn to ignore irrelevant stimuli / practice with distractions / reduce number of stimuli; 2 mental rehearsal / imagery; 3 increase intensity of stimulus; 4 make stimuli unique / memorable / meaningful / relate to past experiences; 5 highlight specific cues; 6 optimal arousal / motivation levels / motivate; 7 warning signals;	3
2(e)	4 marks for 4 of: (sub-max. 1 mark) 1 cognitive (phase of learning); (sub-max. 3 marks) 2 accurate demonstration; 3 performer can see / make sure performer is paying attention; 4 highlight key points; 5 do not overload with information / break up into steps / use appropriate language / verbal guidance; 6 encourage positive transfer / prevent negative transfer of learning; 7 create a mental picture / imagery / visualisation; 8 provide (extrinsic) feedback / reinforcement / praise / eq.; 9 use of manual / mechanical guidance / adapted equipment; 10 allow time for questions / rest / practice;	4
2(f)(i)	2 marks for: 1 (positive transfer – when one <u>skill</u> helps the learning and performance of another skill), e.g. netball shooting and basketball shooting; 2 (enhance its effects) ensure activities have transferrable elements / relevant to other activities OR make sure skills are thoroughly learned before attempting other skills OR making the performer aware of the effects of transfer;	2

Question	Answer	Marks
2(f)(ii)	3 marks for any 3 of: 1 negative transfer – where learning of a <u>skill</u> hinders the learning of another skill; 2 such as practising a forehand in badminton and then practising a forehand in tennis; 3 limiting negative effects by making the performer aware of the different elements in such skills; 4 only practise transferable skills;	3
2(g)(i)	1 mark for: intrinsic – (drive) from within / inside AND extrinsic from outside / rewards / etc.;	1
2(g)(ii)	3 marks for any 3 of: 1 intrinsic motivation gives performer a sense of control over performance; 2 (excessive) extrinsic motivation may reduce / lead to loss of (intrinsic) motivation; 3 failure to achieve an extrinsic reward may lead to loss of (intrinsic) motivation / if no reward may give up; 4 performers demand increasing extrinsic rewards / some rewards become unimportant / lose their value; 5 extrinsic motivation controls / manipulates behaviour / only play for rewards / overly reliant on extrinsic motivation; 6 excessive need for extrinsic causes too much pressure / win-at-all costs attitude / leads to cheating;	3

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Section C																				
3(a)(i)	3 marks for any 3 of: <table border="1" data-bbox="336 376 1294 846"> <thead> <tr> <th></th> <th>sport</th> <th>play</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>highly organised / structured numbers / roles of participants / playing area</td> <td>less organisation by comparison;</td> </tr> <tr> <td>2</td> <td>competitive / concerned with winning / extrinsic</td> <td>for its own sake / involves no ulterior motive / intrinsic;</td> </tr> <tr> <td>3</td> <td>complex / many rules</td> <td>simpler / fewer rules;</td> </tr> <tr> <td>4</td> <td>pre-determined rules / use of officials</td> <td>rules agreed / decided prior to participation;</td> </tr> <tr> <td>5</td> <td>rules are accepted / adhered to / fixed for the duration of the activity</td> <td>rules can be changed as play progresses / spontaneous;</td> </tr> </tbody> </table>		sport	play	1	highly organised / structured numbers / roles of participants / playing area	less organisation by comparison;	2	competitive / concerned with winning / extrinsic	for its own sake / involves no ulterior motive / intrinsic;	3	complex / many rules	simpler / fewer rules;	4	pre-determined rules / use of officials	rules agreed / decided prior to participation;	5	rules are accepted / adhered to / fixed for the duration of the activity	rules can be changed as play progresses / spontaneous;	3
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3(a)(ii)	4 marks for 4 of: (sub-max. 3 marks) <i>individuals:</i> <ol style="list-style-type: none"> 1 helps maintain / develop an individual's health / fitness; 2 helps maintain / enjoyment / feeling of well-being / (stress) relief / relaxation / develop mental health; 3 encourages individual to develop inter-personal / social skills / friendships / working with others; 4 provides challenge / sense of achievement / develops self-esteem; (sub-max. 3 marks) <i>society:</i> <ol style="list-style-type: none"> 5 reduces cost of health care / improves the 'health of the nation' / reduces days of work lost; 6 encourages social interaction / brings people together / develops community spirit; 7 reduces anti-social behaviour / social control / channels energy away from misbehaviour; 	4																		
3(b)(i)	5 marks for any 5 of: <ol style="list-style-type: none"> 1 encourage participation / better health / social control; 2 increased chance of success; 3 increase in national prestige / feel-good factor / morale; 4 advertisement for the country / recognition / 'shop-window effect'; 5 developed infrastructure, e.g. better facilities / coaching / employment; 6 demand / expectation from population for national success; 7 confirmation of political superiority; 8 to enable individuals to succeed / human potential can be discovered; 	5																		

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3(b)(ii)	<p>5 marks for any 5 of:</p> <p><i>Must relate to a country – max. 4 marks if no country identified.</i></p> <ol style="list-style-type: none"> 1 description of government policies / initiatives / schemes / relating to talent ID and talent development; 2 description of pathways / progression in place to achieve excellence / organisation of sport; 3 provision for funding / grants / sponsorship / scholarships; 4 provision of facilities – local / regional / national / equipment / technology; 5 provision / education of coaches; 6 provision of centres of excellence / sports schools / universities / academies; 7 provision of support – medical / sport science; 8 description of policies showing attitudes towards excellence; 9 wider participation base / school programmes / give more reaching top of pyramid; 	5																					
3(c)(i)	<p>4 marks for any 4 of:</p> <table border="1" data-bbox="336 949 1294 1671"> <thead> <tr> <th></th> <th style="text-align: center;">voluntary</th> <th style="text-align: center;">public</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td>run by members / committee / un-paid volunteers</td> <td>run by (local) authority departments / (local) council / (local) government;</td> </tr> <tr> <td style="text-align: center;">2</td> <td>runs on profit-loss / profit not an overriding concern</td> <td>trading on set prices / charges etc. / according to pre-set budget;</td> </tr> <tr> <td style="text-align: center;">3</td> <td>financed by members / fees / sponsorship</td> <td>may involve subsidies / council tax or eq.;</td> </tr> <tr> <td style="text-align: center;">4</td> <td>possibly on trust / charity basis</td> <td>move to private management / Compulsory Competitive Tendering / 'Best Value' / Public Private initiatives;</td> </tr> <tr> <td style="text-align: center;">5</td> <td>aims to increase participation / performance in their sport / look for talent / provide for grass roots of sport</td> <td>public service / community provision / provision at every level;</td> </tr> <tr> <td style="text-align: center;">6</td> <td>facilities / equipment dependent upon income</td> <td>lack of funds means not usually well equipped;</td> </tr> </tbody> </table>		voluntary	public	1	run by members / committee / un-paid volunteers	run by (local) authority departments / (local) council / (local) government;	2	runs on profit-loss / profit not an overriding concern	trading on set prices / charges etc. / according to pre-set budget;	3	financed by members / fees / sponsorship	may involve subsidies / council tax or eq.;	4	possibly on trust / charity basis	move to private management / Compulsory Competitive Tendering / 'Best Value' / Public Private initiatives;	5	aims to increase participation / performance in their sport / look for talent / provide for grass roots of sport	public service / community provision / provision at every level;	6	facilities / equipment dependent upon income	lack of funds means not usually well equipped;	4
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3(c)(ii)	<p>4 marks for 4 of:</p> <p>(sub-max. 3 marks) <i>advantages:</i></p> <ol style="list-style-type: none"> 1 more choice of provision; 2 better / up-to-date / range of facilities / equipment; 3 (more) personal trainers / more expertise; 4 more opportunities to keep fit; 5 (possibility of) discounted / family membership; <p>(sub-max. 3 marks) <i>disadvantages:</i></p> <ol style="list-style-type: none"> 6 increased cost / expensive; 7 fewer exist / travel required; 8 public services suffer / may be underused; 	4
3(d)	<p>5 for any 5 of:</p> <p><i>If no examples from sporting competition – max. 4 marks.</i></p> <ol style="list-style-type: none"> 1 changes in start times; 2 arranging time-outs / breaks to allow for advertising / sponsors; 3 rule changes to make the game more entertaining; 4 deviance clearly identified through technology to officials / TMO / third umpire / citing; 5 emphasis on attacking play / intense action; 6 defensive play and stoppages are discouraged; 7 encourage participation; 8 raise profile of (minor) sports; 9 sports stars have become media figures / focus on female image vs. ability; 10 increase in the spectacular / trivial / sensationalised; 11 increased media brings in increased money / sponsorship; 12 intrusion into private life / demands for interviews; 13 there is more cheating / gamesmanship; 	5