



**Cambridge International Examinations**  
Cambridge International General Certificate of Secondary Education

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**PHYSICAL EDUCATION**

**0413/12**

Paper 1

**May/June 2017**

MARK SCHEME

Maximum Mark: 80

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**Published**

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This document consists of **21** printed pages.

Question	Answer	Marks
1	movements are always the same / do not depend on the environment / self-paced / performer knows exactly what to do / skill has a clear start and end;	1

Question	Answer	Marks
2	flexion;	1

Question	Answer	Marks
3	age / interest / social circumstances / facilities available / where people live / influence of others / culture / religion / gender / ability / fitness level / body composition / disability / health / personality / enjoyment;	1

Question	Answer	Marks
4	cushion / protect bones (from knocking together) / forms a cushion between bones / forms a slippery coat at the ends of bones / reduces friction / absorbs shock;	1

Question	Answer	Marks
5	<i>Examples could be from rugby, e.g.:</i> head guards / gum shields / shoulder pads / post protectors; <i>Accept footwear.</i>	1

<b>Question</b>	<b>Answer</b>	<b>Marks</b>
6	abseiling; skiing; mountain biking; orienteering; canoeing; hill walking; campcraft/hostelling; horse riding / eq.; orienteering; rock climbing; rowing; sailing; snowboarding; windsurfing/surfing; fell running; <i>Accept water sports for one mark but not with sailing etc.</i>	<b>2</b>

Question	Answer	Marks
7	provides high level of detail; available in remote areas; convenient for people unable to see a television screen, such as in a car; easily transportable; allows people with sight problems to keep up to date about events; benefits to the sport; ( <i>Accept examples.</i> ) sponsorship; larger audience for radio station; publicity for the event; increases participation; lower / minimal cost;	<b>2</b>

<b>Question</b>	<b>Answer</b>	<b>Marks</b>
8	age; gender; level of activity / exercise undertaken; frequency of exercise; intensity of exercise; duration of exercise; the environment, e.g. heat / altitude; illness;	<b>2</b>

Question	Answer	Marks
9	providing physical education in the curriculum / offer a range of activities / how the curriculum supports physical education in other subjects; after-school clubs / school–club links / extra-curricular clubs for enjoyment; competitions / fixtures / school teams; trips to sports events; examination courses; access to award schemes / trophies / scholarships etc.; provide facilities / equipment; making activities more fun / less competitive / use of (outside) coaches / sports personalities; promotion of events / celebrations;	2

Question	Answer	Marks
10	increase in adrenaline leads to becoming too aggressive, e.g. resulting in dangerous play; loss of focus on the activity / easily distracted / concentration can be lost / overthinking situations; a novice is unable to learn effectively as they are too excited; cues are missed so wrong decision may be made; panic can take over / decisions are illogical / mistakes are made; nervousness / anxiety / stress / panic (causes distraction);	3

Question	Answer	Marks
11	<p><i>Points made need an explanation of the impact of the actions.</i></p> <p><i>Examples may include:</i></p> <p><i>keeping people physically safe:</i></p> <p>always play by the rules (in a safe environment); <i>Accept examples.</i></p> <p>avoid confrontation (verbal and physical) with officials/spectators;</p> <p>stop the game when a player is injured to prevent injuries getting worse / further injury;</p> <p>avoid taking drugs as this can change a behaviour;</p> <p>accept referee's decisions to prevent overreaction;</p> <p>listen to referee and coach to maintain safety;</p> <p><i>to create a safe environment:</i></p> <p>co-operate within a team to support other players;</p> <p>treat opposition/officials with respect to ensure games are played fairly / shake hands before/after a game to establish a feeling of respect;</p> <p>avoid foul play to create an enjoyable atmosphere;</p> <p>performers removing items from the pitch / do not wear jewellery to ensure the safety of other players;</p> <p><i>Accept other relevant examples with explanations.</i></p>	4

<b>Question</b>	<b>Answer</b>	<b>Marks</b>
12(a)	allows goal setting to take place; identify strengths and weaknesses / increase understanding of skill; motivating / compares performance through knowledge of results and knowledge of performance; identifying adjustments to training and performance; gives confidence;	<b>2</b>
12(b)	wrist – condyloid; elbow – hinge; shoulder – ball and socket;	<b>3</b>



Question	Answer	Marks
12(c)	<p><i>For example in sprinting:</i></p> <p>specific – identify an area of the race to improve i.e. start / drive phase / 30–50 m phase / final 10 m and dip;</p> <p>measurable – make sure the target can be measured, if the target is to improve the sprint start then time the athlete from the sprint start to a 15 m line;</p> <p>agreed – coach and athlete should identify the area to improve and agree on the target before the start of the training;</p> <p>realistic – depending on age / ability / experience of the performer the target will vary. An inexperienced athlete may be asked to improve by seconds but an elite performer may work on tenth of seconds improvement. If the target is unrealistic it can demotivate the athlete;</p> <p>time-phased – agree a time to improve performance / identify a race that the athlete will work towards / a season long target / more inexperienced will improve more frequently than elite performer so time scale should reflect this;</p> <p>exciting – while not losing the focus of the target there needs to be variety so the athlete does not get bored or overtrain, examples of variety in training need to be included;</p> <p>recorded – record times taken during training of area identified. Times can be used to set further targets / motivate performer to train harder / identify progress;</p>	3
12(d)	<p>movement: flexion / extension / bending / straightening;</p> <p>prime mover: the muscle that creates movement by contracting;</p> <p>antagonist: opposing the agonist / often stretched and in a relaxed state / regulates the action of the agonist / prime mover.</p> <p>synergist: muscles around the joint stabilise / support movement / produces similar movement to the agonist / limits excessive movement;</p>	4

Question	Answer	Marks
12(e)	<p><i>Examples should contain the advantages of muscular strength, power, speed or muscular endurance. More than one example can come from one fitness component.</i></p> <p><i>For example in rugby:</i></p> <p>speed to be able to run past an opposing player;</p> <p>upper body strength to prevent an opponent from ripping the ball from them / protect the ball;</p> <p>muscular endurance allows the player to play at high intensity throughout the game;</p> <p>has power to be able to break through a tackle;</p>	<b>3</b>
12(f)(i)	<p>the movement of oxygen into the bloodstream at the same time carbon dioxide is transferred into the lungs and exhaled;</p> <p>air/oxygen enters the alveoli;</p> <p>oxygen flows through capillaries into the blood;</p> <p>carbon dioxide diffuses/moves from the blood into the alveoli; (<i>Accept reverse argument for oxygen.</i>)</p> <p>the movement is the result of the different concentration gradients of the gases in the alveoli and capillaries;</p>	<b>3</b>
12(f)(ii)	<p>greater levels of oxygen in the blood;</p> <p>quicker transfer of oxygen in the blood to muscles;</p> <p>carbon dioxide is removed more quickly;</p> <p>performers can sustain aerobic respiration for longer / increased endurance / less tired;</p> <p>build-up of lactic acid is slower / repay oxygen debt more quickly;</p> <p>shorter recovery time;</p>	<b>2</b>

Question	Answer	Marks
12(g)(i)	sit and reach test / goniometer test;  <i>Accept names of alternative examples of recognised tests.</i>	<b>1</b>
12(g)(ii)	females may have less muscle mass than males / males tend to do sports that reduce flexibility in the upper leg / difference in pelvic structure;  <i>Accept may have less muscle / smaller muscles. Accept reverse arguments.</i>	<b>1</b>
12(g)(iii)	<p><i>Award marks for descriptions of three exercises.</i></p> <p><i>Accept a description of any exercise which uses the full range of movement at the joint.</i></p> <p><i>Exercises may include:</i></p> <p>ballistic stretches – keep the limbs straight, use in a swinging movement;</p> <p>dynamic stretches – stretches that are completed on the move;</p> <p>active stretches – hold a position without any support;</p> <p>passive stretches – hold a stretch position with another part of the body or someone holding the limb in a stretched position;</p> <p>static stretches – stretch to a position and maintain the position for 30 seconds.</p> <p>isometric stretches – use a resistance to push against – push against a wall.</p> <p>use of an appropriate type of weight training;</p> <p>use of resistance machines / bands;</p> <p><i>Award one mark only for one example of a named exercise, e.g. stretching / yoga / pilates / use of a foam roller.</i></p>	<b>3</b>

Question	Answer	Marks
13(a)	<p><i>advantages:</i></p> <p>improves cardio-vascular endurance / easy to monitor / easy to show progression / easy to overload / does not need expensive equipment / can be done anywhere / does not require a high level of coach support / helps maintain a performer's weight / activities are easy to replicate and perform;</p> <p><i>disadvantages:</i></p> <p>can be boring / can demotivate a performer over time / performer can be subject to overuse injuries / performers can often need long periods of recovery / burn out can occur / does not greatly improve anaerobic activities / can have limited value when training for team sports that require bursts of speed;</p>	<b>2</b>
13(b)	<p>unsteady on feet / dizzy / poor balance / headache;</p> <p>collapse / unable to continue / cramp;</p> <p>weakness / exhaustion / tires quickly / lack of energy;</p> <p>poor co-ordination / increased reaction time;</p> <p>feeling sick;</p> <p>heart rate increases / thicker blood / less blood to muscles;</p> <p>lack of concentration / focus / poor decision making;</p> <p>overheat / stop sweating / unable to cool body / risk of heatstroke;</p>	<b>2</b>

<b>Question</b>	<b>Answer</b>	<b>Marks</b>
13(c)	more likely to mistime challenges; become slower (and more of a target in contact sports); decision making becomes slower / make poor decisions; co-ordination becomes reduced / poor technique; slow to react / respond to dangerous situations; lack of concentration focus; decreased motivation;	<b>3</b>

Question	Answer	Marks
13(d)	<p>hot take regular breaks / water / appropriate clothing;</p> <p>cold / frost / ice / snow postpone / abandon the game / appropriate clothing;</p> <p>wet / heavy rainfall appropriate footwear;</p> <p>dry appropriate footwear / maintenance of surface;</p> <p>long grass / uneven or pitted surface / obstacles on pitch cut grass / fill holes / clean pitch;</p> <p>use of markers on pitch make sure they are easy to see (not green) do not have posts at head height;</p> <p>wobbly goal post secure with weights / peg portable post to the ground;</p> <p>rugby posts without padding ensure padding available before game starts;</p> <p>corner posts that are not flexible and could snap change to more suitable posts or remove;</p> <p>location of pitch too close to fencing etc. move fencing if possible / move to another pitch if possible;</p> <p><i>Accept other examples with suitable explanations.</i></p>	<b>3</b>

Question	Answer	Marks
13(e)	<p><i>meaning:</i></p> <p>contractions take place but the muscle (fibres) stays the same length;</p> <p><i>examples (which must be from a sport):</i></p> <p>rugby – in the scrum the isometric contractions in the leg prevent a performer being pushed back;</p> <p>gymnastics – the gymnast will be able to hold a steady handstand position;</p> <p>tennis – the grip on the racket, no movement in the joints of the hand but a constant force is applied to keep the grip firm;</p> <p>rock climbing – hand holds maintain a single position whilst supporting body weight but there is no movement in the hand;</p> <p>(downhill) skiing – the body holds a set position when streamlining / maintaining a snow plough position;</p> <p>mountain biking – hand grip and forearms remain in a set position to establish a stable position of control;</p> <p>athletics – set position at the sprint start;</p>	<b>4</b>

Question	Answer	Marks
13(f)(i)	weight training; ( <i>Accept individual examples, e.g. use of dumbbells / free weights.</i> )  examples of using own body weight, e.g. plank / press-ups;  resistance machines / gym machines;  resistance bands;  swimming / rowing against flow of water;  circuit training, with appropriate detail;  parachutes / pulleys;  running up hills on sand;  rucking bags;  <i>Accept other examples.</i>	<b>2</b>



Question	Answer	Marks
13(f)(ii)	<p>increases strength;</p> <p>increases muscular endurance;</p> <p>increases speed;</p> <p>increases power;</p> <p>improves posture;</p> <p>reduces the risk of injury;</p> <p>increase muscle size;</p> <p>increase anaerobic endurance;</p> <p>increase in bone density;</p> <p>controlling weight;</p> <p>improves performance when resistance is removed;</p> <p><i>Accept appropriate examples.</i></p>	2
13(f)(iii)	<p>specific – ensure the training is specific to resistance training;</p> <p>overload – increase the weight being used / increase the number of repetitions and or sets / increase the frequency of sessions;</p> <p>progression – plan to increase the level of difficulty to achieve aims;</p> <p>reversibility – to ensure progress is made plan for rest in training plan / avoid overuse injuries / set achievable targets to provide motivation to continue training / provide variety of training to prevent a performer becoming bored/demotivated;</p> <p><i>Accept FITT applied to overload for one mark.</i></p>	2

Question	Answer	Marks
14(a)	<p>certain sports have age restrictions;</p> <p>young children may not be physically capable / safety considerations – contact / tag rugby / may lack experience;</p> <p>younger people more influenced by peers;</p> <p>older people with family / work commitments have less time to play sport;</p> <p>younger people have school / education / university etc. commitments;</p> <p>younger people tend to participate in more adventurous activities;</p> <p>older people may not be physically strong enough for contact sports;</p> <p>older people may lack endurance / energy to play certain sports;</p> <p>older people may lack flexibility to play certain sports;</p> <p>older people may be more concerned about injury;</p> <p>opportunity / access differences;</p> <p>some sports do not attract certain age groups;</p> <p><i>Accept appropriate socio-economic reasons.</i></p> <p><i>Accept reverse arguments.</i></p>	<b>2</b>

Question	Answer	Marks
14(b)	encourages an increase in participation / more opportunities; greater awareness of disability sports / greater media coverage; motivation for performers / confidence; provides exposure that can increase sponsorship opportunities for individuals; increase the number of role models / elite performers; encourages coaches to become involved; increases funding for the sport; greater access to high-quality facilities; display equality of opportunity / more accepting of disability sport in society / greater inclusion;	<b>3</b>

Question	Answer	Marks
14(c)	<p>develop social skills / communication skills / work more cooperatively / improves relationship between students and staff / learn to work with others;</p> <p>better understanding of people (culture / religion / social);</p> <p>having others to train with provides motivation / support;</p> <p>develop a sense of loyalty / respect / belonging;</p> <p>develop friendships / spend time with others who have similar interests;</p> <p>have fun;</p> <p>learn to accept decisions / accept winning and losing with others / develop empathy / understanding of the needs of others;</p> <p>leadership skills;</p> <p>improve / maintain fitness;</p> <p>improve skills / able to play at a higher level / access to coaching/equipment;</p> <p>improves confidence / self-esteem;</p> <p>helps reduce the stress of school work / aids mental well-being;</p> <p>improves health;</p> <p>raises students status within school / receive awards / prestige of representing the school;</p> <p>encourages competition;</p> <p>take part in sports tours;</p> <p>support for scholarships / aids application to higher education / aids employment;</p> <p>school grades may improve;</p>	<b>4</b>

Question	Answer	Marks
14(d)	gain information about sport / pathways into sport; watch online tutorials / find out how a sport is played; look for fixtures / races etc. / arrange fixtures / find events to take part in / enter online; able to communicate with a coach / other performers / send video clips of training; get up-to-date results / up-to-date sports news; buy tickets for an event / publicise events / advertise / pay membership fee; watch a screening of a live event / highlights (videos) / be entertained; data and research material available; speed of access to the points above / easily accessible; able to buy greater range of equipment / clothing online / greater choice of equipment / greater choice of clothing; social media allows interaction between fans and sports stars / role models; increases opportunity for sponsorship / crowd funding; role models created;	6