

**CAMBRIDGE INTERNATIONAL EXAMINATIONS**  
International General Certificate of Secondary Education

## **MARK SCHEME for the May/June 2014 series**

### **0413 PHYSICAL EDUCATION**

**0413/11**

Paper 1, maximum raw mark 80

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 May/June 2014 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

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<b>Question</b>	<b>Expected Answer</b>	<b>Mark</b>
<b>1</b>	able to cope with stress ; feel good / positive about yourself / confident / motivated ; control emotions / reacting to situations calmly ;	[1]
<b>2</b>	bright lights / noise / crowd ; fear of the opponent ; fear of failure / high rewards ; pressure from parents / coach / friends / media ;	[1]
<b>3</b>	free time ; time when not working / sleeping / doing essential activities ; time when you can take part in activities for pleasure / time to take part in activities of choice ;	[1]
<b>4</b>	plasma ; red cells ; white cells ; platelets ;	[1]
<b>5</b>	examples of the following can be given: physical ; mental ; social ; health and fitness ;	[1]
<b>6</b>	people live longer – more people can participate for longer ; people recover quicker – people can return to participation quicker ; better understanding of the impact of sport on maintaining health ; research – people encouraged to take part at an older age ;	[2]

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<b>7</b>	<p>pasta provides high levels of carbohydrates ;</p> <p>distance events need high levels of energy ;</p> <p>carbohydrates provide easily obtained energy ;</p>	[2]
<b>8</b>	<p>variety of venues / facilities ;</p> <p>greater variety of sports available ;</p> <p>greater opportunities for team sports / more competitors / more clubs to join ;</p> <p>ease of access / better transport ;</p> <p>easier access to coaching ;</p>	[2]
<b>9</b>	<p>shape and support ;</p> <p>provides a rigid framework that determines the suitability for certain sports ;</p> <p>movement ;</p> <p>allows movement by attaching to muscles which pull on bones ; (examples of movement given credit)</p> <p>protection ;</p> <p>protection of internal organs, vital in contact sports ;</p> <p>blood production ;</p> <p>produces red blood cells that transport oxygen to muscles to provide energy ;</p>	[2]
<b>10</b>	<p>reduces circulation and slows any internal bleeding ;</p> <p>stops swelling ;</p> <p>reduces pressure on the injured part ;</p> <p>reduces throbbing ;</p>	[2]
<b>11</b>	<p>answers accepted that include power or strength activities, e.g. sprinting, power lifting, high jump, etc. ;</p> <p>in a named sport, the situation when fast twitch fibres are a benefit, e.g. cricket – throwing the ball, must be given</p>	[2]

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<b>12</b>	<p><b>local authorities</b> (accept government / public) ;</p> <p>cheaper admission ;</p> <p>easier to access ;</p> <p>no membership required ;</p> <p>wide variety of sports available ;</p> <p><b>private companies</b> ;</p> <p>high quality equipment ;</p> <p>specialist equipment and facilities ;</p> <p>specialist coaching ;</p> <p>team competitions often available ;</p> <p>access often easier ;</p> <p><b>voluntary organisations</b> ;</p> <p>locally based in the community so easy to get to ;</p> <p>cheaper or sometimes free ;</p> <p>links into the needs of the community ;</p> <p>reflects local interests / focal point for the community ;</p>	[3]
	<b>Total:</b>	<b>[20]</b>

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<b>Unit B1 : Factors affecting performance</b>		
<b>(a)</b>	<p>avoid confusion / easier to understand ;</p> <p>allow a performer to perfect aspects of the skill before progressing / commit to the long term memory ;</p> <p>prevents developing bad habits / poor technique / allows better understanding of what is required / can be difficult to retain information in the early stages of learning a skill ;</p> <p>allows focus on the more important parts of the skill ;</p>	[2]
<b>(b)</b>	<p>joint movement is reduced / stopped ;</p> <p>limits extension and flexion at the knee ;</p> <p>the ligaments no longer limit the rotational movement of the knee ;</p> <p>the ligaments no longer limit the amount the knee bends ;</p> <p>the ligaments no longer limit the extent to which the knee straightens ;</p> <p>joint lacks stability ;</p> <p>joint not connected ;</p>	[3]
<b>(c) (i)</b>	a chemical substance that affects the way the body works ;	[1]
<b>(ii)</b>	<p>improve performance / gain an advantage ;</p> <p>able to train harder / longer ;</p> <p>become stronger / faster / more energy / lose weight ;</p> <p>become more alert / calmer / improves concentration ;</p> <p>recover from training / performing ;</p> <p>mask injury ;</p> <p>able to calm a performer down (needed for certain sports) ;</p> <p>win competitions / matches / prizes / medals ;</p> <p>fear of losing a place in a team ;</p> <p>fear of losing a sponsor / pressure from coach / media / team mates ;</p> <p>think everyone else is taking drugs / doesn't think they will get caught ;</p>	[3]

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<b>(d)</b>	<p><b>long term effects:</b></p> <p>strengthens the heart ;</p> <p>walls of the heart get thicker ;</p> <p>resting stroke volume increases / more blood can be pumped in every beat ;</p> <p>cardiac output increases / total amount of blood that can be processed can be increased ;</p> <p>resting heart rate becomes slower / working heart rate slower to increase ;</p> <p>recovery rate improves ;</p> <p>blood pressure decreases ;</p> <p>arteries become wider / more elastic ;</p> <p>cholesterol reduced / lower levels of fat in the blood ;</p> <p>more red blood cells produced / greater supply of oxygen to the muscles ;</p> <p>increased capillarisation ;</p> <p>greater capacity to process lactic acid ;</p> <p><b>improvements:</b></p> <p>athlete can perform for longer / less tired / better stamina ;</p> <p>athlete can work at higher levels of intensity for longer ;</p>	<p>[4]</p> <p>[1]</p>
<b>(e) (i)</b>	<p>provides clear routes for progress / directs training ;</p> <p>motivates a performer to work harder ;</p> <p>helps prepare a performer mentally / greater focus ;</p> <p>allows a performer to check their progress ;</p> <p>having a goal can give a performer more confidence ;</p> <p>gives a performer a feeling of being in control / satisfaction of completion ;</p>	<p>[2]</p>

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<b>(ii)</b>	<p>exemplar: named activity – long-distance running</p> <p>specific – set targets that are realistic to long distance running such as improving 5 K time by 20 seconds ;</p> <p>measurable – ensure that all targets can be measured by improving time or distance ;</p> <p>realistic – ensure the target time is realistic and is based on the ability of the performer, e.g. expecting a performer to improve 5K time by 20 seconds when the previous year there was only an improvement of 2 seconds ;</p> <p>agreed – coach and performer agree the times that should be targeted ;</p> <p>time-phased – training should be mapped against a programme so that there are short term targets to achieve at certain times ;</p> <p>exciting – training should be exciting so the coach will vary the training to include sprint training / weight training / fartlek training ;</p> <p>recorded – times from training sessions are recorded as a means of monitoring progress and readiness for races ;</p>	[3]
<b>(f)</b>	<p>cardiovascular endurance / stamina ; increase in blood flow to muscles / reduces fatigue in muscles / increases muscle’s ability to cope with lactic acid / able to repeat sprints ;</p> <p>muscular endurance ; the muscle’s ability to repeat contractions near maximum level – essential in the latter stages of a race ;</p> <p>strength ; the force muscles can exert, essential for the drive out of the blocks / ability to push against the ground ;</p> <p>flexibility ; the ability to increase stride length when running ;</p> <p>speed ; the ability to move limbs quickly – leg speed essential in sprinting ;</p> <p>body composition ; the athlete needs to have a muscular body to ensure that there is a high level of fast twitch muscle fibres / too much fat reduces the level of fitness ;</p>	[6]
	<b>Total:</b>	<b>[25]</b>

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<b>Unit B2 – Health, safety and training</b>		
<b>(a)</b>	avoid breaks in training ; ensure training is interesting so performer works hard ; ensure training is specific to the sport ; regular training programme / application of FITT principles / if unable to train fully some low level work takes place ; ensure rest periods ;	[2]
<b>(b)</b>	blood vessels under the skin widen / vasodilation / blood vessels contract / blood moves from extremities to protect the core temperature / radiation occurs ; sweating / body will stop sweating if suffering from heat stroke ; body hair flattens / hair lifts to trap air ; body starts to shiver to produce heat ; through water vapour when breathing ;	[3]
<b>(c)</b>	checks should include: weather / wind conditions ; water conditions ; all planned equipment available / first aid equipment / safety equipment available, etc. / ensure everybody has all safety equipment ; all participants healthy / not injured ; all supervisors available ; check all participants understand the safety regulations / emergency procedures ; danger from boats / creatures in the water / other people on the water ;	[4]
<b>(d) (i)</b>	weight can be easily adjusted ; safer to use ; does not need a spotter ; easier to work on specific muscle groups ; requires less technique to use ;	[1]



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<b>(ii)</b>	<p><b>isotonic training:</b></p> <p>muscles being trained are moved ;</p> <p>muscles are strengthened throughout the movement ;</p> <p>weights are lifted through a range of movement ;</p> <p><b>isometric training :</b></p> <p>muscles contract but do not shorten ;</p> <p>weights are held in a fixed position ;</p>	[2]
<b>(iii)</b>	<p>target specific muscle groups – accept examples ;</p> <p>target a specific aspect of sprinting action – accept examples, e.g. drive from the blocks ;</p> <p>use low weights / over long periods of time ;</p> <p>high frequency / speed of repetition ;</p> <p>high number of repetitions ;</p> <p>increase weight over time ;</p>	[2]

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<b>(e)</b>	<p>increase in heart rate ;</p> <p>increase in stroke volume ;</p> <p>increase in cardiac output ;</p> <p>increase in blood pressure ;</p> <p>more blood / oxygen reaching the working muscles ;</p> <p>increase in body temperature ;</p> <p>sweating / vasodilation occurs ;</p> <p>skin goes red / increase in blood supply to the skin ;</p> <p>blood is shunted from unused tissue to the working muscles ;</p> <p>increase in gas exchange ;</p> <p>increase in carbon dioxide production ;</p> <p>change from aerobic to anaerobic respiration ;</p> <p>lactic acid starts to be produced ;</p> <p>increase in breathing rate / heavier breathing / deeper breathing ;</p> <p>increase in tidal volume ;</p> <p>muscles become warmer / contractions increase / faster contractions / greater strain on muscles ;</p>	[6]
	<b>Total:</b>	<b>[20]</b>

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<b>Unit B3 – Reasons and opportunities for participation in physical activity</b>		
<b>(a)</b>	taxation ; sponsorship ; lottery funding ; ticket sales ; selling the transmission rights of the event ;	[2]
<b>(b)</b>	fewer opportunities for female performers / fewer clubs / some women feel uncomfortable in mixed training sessions ; attitudes towards female performers ; family commitments ; lack of childcare facilities ; religious beliefs ; fewer role models ; lack of sponsorship opportunities ; lack of media coverage ;	[3]
<b>(c)</b>	increase in income ; more people want to attend / watch ; increase in people wanting to participate ; increase in the amount of sponsorship ; improvement in coaching opportunities ; facilities improve ; quality of equipment improves ; standards of play / performance improves ;	[4]

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<b>(d)</b>	<p>skill – the more skilful the better the performance / has more time / adapts to situations ;</p> <p>fitness – the fitter the player the longer they can perform at a high standard ( examples of fitness components can be given credit) ;</p> <p>physique – the activity needs to suit the performer’s body type / greater advantage for certain body types, e.g. height an advantage in basketball ;</p> <p>age – activities that require speed / flexibility are more suited to younger players / physical depreciation as performers get older ;</p> <p>body composition – if overweight the performer will be less able to play well ;</p> <p>fatigue – lack of energy will reduce the quality of performance and cause errors / lack of recovery ;</p> <p>illness and injury – can cause a player to stop or reduce training / limited mobility resulting from injury / lack of energy if not fully recovered from illness ;</p> <p>diet – need to eat an appropriate diet / lack of carbohydrate could result in a lack of energy / muscles not repaired due to lack of protein / poor hydration results in a lack of energy ;</p> <p>drugs – smoking / alcohol will impair performance / performance-enhancing drugs can result in being banned ;</p>	<b>[6]</b>
	<b>Total:</b>	<b>[15]</b>