

MARK SCHEME for the October/November 2013 series

0413 PHYSICAL EDUCATION

0413/13

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 October/November 2013 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

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Section A

- 1 • Elevate the injured area to prevent pooling of blood [1]
- 2 • Maintain / improve fitness / posture
• Maintain / improve health / reduce injury
• Maintain / improve overall / social / mental well-being
Examples of the above can be given credit [1]
- 3 • Helps to avoid injury as a result of lack of physical preparation
• Prepares the body for exercise or activity [1]
- 4 • Television / books / newspaper / magazines / internet [1]
- 5 • Promoting good health / repair of muscle tissue / growth / insulation [1]
- 6 • The stage at which the brain makes sense of what is happening
• Assistance of perception and memory
• For example, taking into account direction of slope before a putt in golf. The example must indicate the skill selection in relation to the stimuli
1 mark awarded for the description, 1 mark for the example [2]
- 7 • The ability to cope with stress
• The ability to control emotions
• A “feel-good” factor about oneself / happy with self
• Feel valued
• Have a place in society [2]
- 8 • The bending of a joint / reducing angle at a joint
• For example, when the knee is bent in preparation to kick a ball in football or rugby
• Bending elbow in preparation to shoot in netball or basketball
1 mark for description of the movement and 1 mark for the example [2]
- 9 • Develop dual-use facilities
• Establish and develop links with local sports clubs and teams
• Coaches visit school to offer specialist additional activities / development of extra-curricular activities
• Organise twilight community activities / community sporting activities or events [2]
- 10 • Activities could include: sailing / canoeing / swimming / surfing / life-saving surf competitions / fishing / rowing / beach volleyball [2]
- 11 • Ribs protect organs from damage in contact sports
• Vertebral column provides protection for spinal cord (and link for CNS to muscles)
• The skull protects the brain [2]

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- 12 • To ensure that body systems work hard enough to make them adapt to increasing demands
- Performers need to improve otherwise the training is of little use / become bored
 - No pain / no gain
 - Increase the intensity of the training, weights, distances etc.
 - Without progression there will be no improvement
 - Provides motivation to keep training when progress is made
- [3]**

[Total: 20]

Section B

Unit 1 Factors affecting performance

- 1 (a) • (Often results in) dehydration / cramps / dizziness / headaches / nausea / arrhythmia / tiredness / blurred vision / loss of appetite / need to go to the toilet often / banned from event / reduction in kidney function **[2]**
- (b) (i) Feedback **[1]**
- (ii) • To see if the actions have been successful or need to be adapted in some way
- To provide knowledge of performance
 - To provide knowledge of results
- [1]**
- (c) • Extends the forearm at the elbow
- Extends the arm
 - For example, performing a smash shot in badminton
- 1 mark for a description, 1 mark for the example **[2]**
- (d) (i) • Wedge shaped body
- Wide shoulders
 - Narrow hips
 - Large cubical head
 - Broad shoulders with muscular arms and legs / large muscle mass
 - Low proportion of body fat
 - Narrow appearance from front to back
 - High proportion of fast twitch fibres
- [2]**
- (ii) • Suited to sport requiring explosive strength and power, for example, sprinting
- Muscle bulk also help in contact sports, for example, rugby
- [1]**

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- (e) • Gas exchange becomes faster and more efficient
• Muscles can work for longer without tiring
• Vital capacity / tidal volume increase
• Oxygen delivery improved
• Increase in capillarisation / more oxygen available
• Greater oxygen debt tolerance / quicker recovery after exercise / ability to remove lactic acid improves
• VO_2 max improves
• Increase in red blood cell production
• Heart walls become stronger / thicker
• Lower resting heart rate
• Stroke volume / cardiac output increases
• Decrease in blood pressure / arteries become more elastic
• Bone density increases [4]
- (f) (i) • The ability to work for long periods of time / without becoming tired
• The ability for the heart and lung systems to cope with activity (over a long period of time)
• Efficient heart, lungs and blood vessels to keep muscles supplied with energy
• Efficient removal of waste products [2]
- (ii) • A distance, preferably 400m, is marked prior to candidates performing a run
• Markers are placed every 50 or 100m to assist in calculating total distance achieved
• Candidates run as far as possible for a time of 12 minutes
• When 12 minutes has elapsed the distance run is calculated and level of performance recorded
• Scores compared to published table assess performance
All aspects of the mark scheme must be identified for full marks to be awarded [2]
- (iii) • Identify which player is most suitable for a position in a team / most suitable sport based on their aerobic capacity
• In an event lasting a period of time the candidate with the higher scores would have an advantage
• Repeated testing guide improvement in a person's stamina
• Results can be compared to national norms and standards
• Help with the planning of a training programme / set goals or targets
1 mark can be awarded for a detailed analysis of the data [2]

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- (g) (i) • Positive thinking, telling yourself that you are up to the task and capable of doing well / success
• Mental rehearsal, picturing yourself carrying out successful movements and practicing them in the mind
• Relaxation, using controlled breathing and gentle movements
• Influence of coach, giving verbal reassurance, talking calmly and being positive
• Listening to music / reading / meditation [3]

- (ii) • Performer becomes over anxious
• Performer becomes nervous
• More prone to make mistakes
• Loss of focus / concentration
• Could become irrational / overreact to situations
• Increased aggression [3]

[Total: 25]

Section B

Unit 2 Health, safety and training

- 2 (a) • Isotonic (dynamic) involves muscle shortening; example, lifting a muscle at a regular constant speed, bicep curls
• Isometric (static) involves muscles contracting but staying the same length; example, holding / pushing a constant weight or force, rugby scrum [2]
- (b) • Caused by damage to the surface of the skin by heat or friction
• A protective “bubble” is formed on the skin’s surface
• Do not break the blister
• Cover with protective, preferably specialist plaster
• Allow blister to heal / fall off naturally [2]
- (c) • Adverse weather conditions may be inappropriate for the activity to take place / effect of weather conditions on the pitch
• Debris, such as litter, may cause injury
• Equipment in poor condition, e.g. padding on rugby posts in poor condition or missing
• Inappropriate supervision, application of rules and regulations, uninvited participants
• Any other logical named circumstances which may place performers or spectators at elements of risk
• Shaded areas when sun and temperature is a concern
• Proximity to buildings, roads etc. [3]

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- (d) (i) • Glucose [1]
- (ii) Answers should demonstrate the increase that results when exercising
- With sufficient oxygen present exercise can continue over a long period
 - The effect of lactic acid will be minimal / limited / builds slowly
 - More oxygen is diffused into the circulatory system / more O₂ reaches the muscles / more CO₂ is expelled
 - Breathing becomes more regular and deeper
 - Tidal volume increases
 - Heart rate increases slowly
 - Blood flow to areas unused reduced
 - Blood flows closer to the skin surface to aid heat loss / start to sweat
 - Glycogen released as glucose to allow muscles to work
 - Increase in blood pressure [2]
- (e) • Reduction in heart disease
- Able to perform longer / fitter / greater tolerance to O₂ debt / greater tolerance of lactic acid
 - Heart rate will slow down at rest putting less pressure on the heart
 - Working heart rate reduces
 - Heart rate returns to normal more quickly / more able to repeat exercise quickly
 - Blood pressure fall as arteries become more elastic
 - More red blood cell produced increasing oxygen reaching muscles
 - The heart grows larger / stronger / walls thicker / contractions become more powerful
 - Improvements in respiratory problems such as asthma
 - Rib muscles and diaphragm grow stronger / chest cavity becomes larger / lungs can expand further / vital capacity increases / V_{O₂} max increases
 - Gas exchange improves / capillarisation increases
 - Able to take part in daily activities / life expectancy increases
 - General improvement in health / cholesterol levels reduce [4]
- (f) (i) • Protein is necessary to replace / build / repair muscle / skin
- Fibre provides bulk to the food we eat [2]
- (ii) Protein
- Recovery after injury will be slower
 - Less growth of tissues / strength / power
 - Less efficient working muscles
 - Less available as an energy source when carbohydrate or fat is not available
- Fibre
- Less regular release of sugars from food to maintain a steady flow of energy
 - Insufficient bulk can cause constipation
 - Can lead to weight gain
 - Feelings of lethargy [4]

[Total: 20]

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Unit 3

Reasons and opportunities for participation in physical activity

- 3 (a)**
- Longer life expectancy / participate for longer
 - Developments in injury treatment / recovery / medical support more readily available
 - Better and earlier identification of illness
 - Greater awareness of health issues / preventative help
 - Artificial aids / prosthetics
- [Descriptions must relate to health care and must relate to taking part in activity] **[2]**
- (b)**
- Playing facilities are upgraded / developed to the highest specification
 - Training facilities are improved to give host nation best possible opportunities
 - Emphasis on coaching leading up to the event to ensure maximum performance from athletes / performers / greater opportunities for participation
 - Increase in participation **[2]**
- (c)**
- Live sporting programmes / live events shown at convenient times / competitions shown from around the world / regular sporting programmes shown
 - Show less popular sports / create increased interest
 - Highlights / analysis / interviews
 - Documentaries
 - Quiz programmes
 - News features / regular updates / advertises sport events
 - Dedicated sports channels
 - Educational programmes for schools
 - Text information
 - Interactive TV **[3]**
- (d)**
- Increased participation in disability sport, wider variety of activities available in society and schools
 - Adaptation to suit performers needs
 - More athletes able to train full time
 - Improvement in facilities for performers and spectators / better access
 - Increase in number of coaches specialising in performers with disabilities
 - Growth of disability / Paralympic events
 - Greater social awareness of people with disabilities
 - Increase in role models
 - Changes can result from the changes in the law **[4]**

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- (e) • Improvements in technology mean less manual labour and time is needed in the workplace / shorter working week
- Working at home more possible due to the internet
 - Increased unemployment
 - Earlier retirement
 - Improvements in health care and standards of living. Longer life expectancy and more leisure time available / access to child care facilities / more aware of health needs
 - People choose to work less (part-time) / job share
 - Government initiatives to improve facilities / participations
 - Women choosing to have families later in life / changes in traditional roles within the family

[5]

[Total: 15]