

**MARK SCHEME for the October/November 2013 series**

**0413 PHYSICAL EDUCATION**

**0413/12**

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 • Rest the injured area [1]
- 2 • Allows performer to rest  
• Allows performer to recover / more energy  
• Allows performer to concentrate / focus while playing [1]
- 3 • No mark for naming sport. Credit awarded for associated protective clothing, for example: gloves in cricket, gum shield in rugby, shin pads in football [1]
- 4 • Radio / books / newspaper / magazines / internet [1]
- 5 • Energy / repair of muscle tissue / good health  
• Examples of the above can be given credit [1]
- 6 • Age / maturity / experience / younger performer lack experience / older performers will have previous performances to refer to  
• Motivation / performers need a drive to want to perform / want to train when situations are difficult  
• Anxiety / players may find it difficult to play in front of others  
• Arousal / performers cannot control emotions  
• Conditions / facilities are of poor condition / equipment of poor quality  
• Facilities / access to training facilities limited  
• Environment / access to natural facilities  
• Teaching / coaching / quality of coaching / amount of time spent training / cost of coaching  
[Candidates must name a factor and explain appropriately to gain 2 marks]  
Answers should not relate to the quality of performance rather than skill level [2]
- 7 • All the body systems function well  
• Person is free from illness  
• Person is free from injury  
• The ability to carry out everyday tasks [2]
- 8 • Movement towards the centre line of the body  
• Examples must relate to specific aspects of a sport. For example: when legs are brought back together at the end of a straddle jump in gymnastics  
• The contraction of the adductors on the inside of the leg [2]
- 9 • Offer intense / additional coaching / outside coaches coming into school  
• Establish links with a range of clubs  
• Offer inter-school activities  
• Join leagues / competitions / tournaments  
• Parent / pupil activities [2]

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- 10 • As a result of altitude, weather, challenge and terrain
- Activities that can only take place in a mountain area
  - Skiing and snowboarding could take place
  - Rock climbing / scree scrambling
  - Mountain biking
  - Hill / Fell walking
- [Must have 1st point to score 2 marks (and one other)] [2]
- 11 • Gives the body a rigid framework / accept examples of areas of the skeleton that gives structure, e.g. rib cage
- Provides surface for attachment of muscles
  - Holds vital organs in place
  - Enables good posture
- [2]
- 12 (i) Reversibility:
- Levels of strength, flexibility and stamina decrease with a reduction of training. Example: Gymnasts lose mobility if they do not constantly perform stretching exercises / performers may stop due to injury, holiday, close season  
1 mark awarded for description and 1 mark for an example [2]
- (ii) • Specificity / progression / overload [1]

**[Total: 20]**

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**Section B**  
**Unit 1 Factors affecting performance**

- 1 (a) • Pain from injury is masked and cannot be felt making injury worse and recovery time longer  
• Injury could become permanent and end performers sporting career  
• Narcotic analgesics are highly addictive and could lead to dependency  
• Possible ban from sport if detected [2]
- (b) (i) • Input [1]
- (ii) • The (body's various) senses tell the performer what is happening [1]
- (c) • Allows movement of the arm in all directions at the shoulder / raises arm at shoulder / shoulder flexion / abduction  
• For example bowling in cricket  
1 mark awarded for description and 1 mark for the example [2]
- (d) (i) • Pear shaped body  
• Wide hips  
• Narrow shoulders  
• Rounded head  
• High proportion of fat on body, upper arms and thighs  
• Wider body shape front to back as opposed to side to side  
• Slim wrists and ankles [2]
- (ii) • Suited to sports which require strength and power but with limited movement, for example a wrestler / sumo / rugby prop forward [1]
- (e) (i) • Carries O<sub>2</sub> to working muscles  
• Carries CO<sub>2</sub> to lungs for exhalation  
• Blood clotting or coagulation, which is used to stop bleeding in event of injury  
• White blood cells help fight infection [2]
- (ii) • Build up of lactic acid causes fatigue  
• Build up of lactic acid causes pain in the muscles  
• Breathing rate increases to replenish blood supply with O<sub>2</sub>  
• Performer may have to stop / could collapse [2]

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- (f) (i) Answers should relate to performances over time
- 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)
- Perform a number of 20m shuttle runs in time to bleep from pre-recorded source
  - After each minute the bleep gets shorter so running speed needs to increase
  - Performer continues until they are no longer able to keep up
  - Level of performance recorded
  - Scores compared to published table to calculate VO<sub>2</sub> maximum
- [Candidates must give a full description of the process in order to gain 2 marks, 1 mark awarded if the candidate demonstrates an understanding of the majority of the above points)
- [2]
- (iii)
- 1 mark can be awarded for a detailed description of the data in the table
  - Gives an accurate measure of current aerobic capacity / in an event lasting a period of time the candidate with the higher scores would have an advantage
  - Repeated testing can act as a guide to improvement in a person's stamina
  - Results can be compared to national norms and standards
  - Identify appropriate training programme
- [2]
- (g) (i) Specific / Measurable / Accepted (or Agreed) / Realistic / Time phased / Exciting / Recorded
- [2]
- [Banded marking; 5–6 correct award 2 marks, 3–4 correct award 1 mark]
- (ii) Example: Basketball
- Specific: To achieve a set number of points scored per game
  - Measurable: Points scored
  - Accepted: Both performer and coach must accept the performance goal adopted
  - Realistic: Targets set must be achievable, for example a 70% success rate in shooting (7 out of 10 shots achieved)
  - Time phased: Targets need to be given a set period for completion and review
  - Exciting: Offer challenge, inspiration and reward for the performer
  - Recorded: Results should be recorded to evaluate progress, provide feedback and motivate performer
- [4]
- (1 mark awarded for the description of the target and 1 mark for the example which must link to the named activity)

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**Section B**  
**Unit 2 Health, safety and training**

- 2 (a)**
- Meditation
  - Listen to music
  - Reading
  - Breathing techniques
  - Having a walk prior to event
  - Periods of relaxation / rest / sleep
  - Reduce tension
  - Avoid anxiety situations
- [2]
- (b)**
- Clean with running, clean water
  - Dab dry and cover with a dressing
  - Clean and dry around affected area
  - Hold dressing in place with plaster / apply pressure
  - Raise the injured part
- [2]
- (c)**
- Floor surface – if wet may cause slipping / surface suitable for activity / uneven / broken or damaged
  - Equipment – left out of place may cause obstruction / of suitable condition / good repair
  - Poor / insufficient lighting
  - Dual activities interfering with each other / enough space for activity
  - Inadequate supervision / space for spectators / non participants
  - Temperature in the hall / too hot or too cold / condensation on the floor if too cold
- [3]
- (d)**
- Age: young people who are growing need to eat more as a result of energy expenditure
  - Adults generally need less food as they become more sedentary (but tend to over consume)
  - Someone with a sedentary lifestyle, such as an office worker needs less food than someone such as a postman who is regularly active
  - Body composition: generally the “bigger” you are the more food you need to maintain metabolism
  - Sex: men normally require a greater calorific intake than women
  - Sports played / active healthy lifestyle: the more strenuous the sport the greater the intake of food required
- [3]

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- (e) Short term effects of exercise on the cardiovascular system:
- Increase in heart rate which prepares the body for activity
  - Increase in hormone stimulation improving anticipation
  - Increase in blood pressure
  - Heart rate continues to work at a steady period beyond exercise as a result of hormone levels before steadily returning to normal
  - During exercise heart rate increases rapidly
  - This provides the muscles with O<sub>2</sub> and nutrients to provide the muscles with energy
  - During exercise, cardiac output is increased. Cardiac output = stroke volume × heart rate
  - During exercise stroke volume increases
  - (because) more blood is sent back to the heart due to the muscles squeezing blood in the veins
  - As the heart fills up, it stretches as the muscle fibres stretch; they contract more strongly, pumping out more blood

The short term effects of exercise on the respiratory system:

- During exercise, the body needs a supply of oxygen to release energy in the muscles

This is done by:

- Increasing breathing rate by about three times the normal rate
- Increasing tidal volume by five times the normal rate
- Increasing blood supply to and through the lungs
- Increasing oxygen uptake
- Breathing rate increases due to demands for more O<sub>2</sub>
- Blood is immediately diverted from some functions (digestive system) to muscles

[4]

- (f) (i) • Carbohydrate provides the most ready source of energy
- Minerals are required by the body for building tissue, for example, calcium forms bones

(ii) Carbohydrate [2]

- No energy for endurance events / poor energy resources
- No stored glycogen for later use when required
- Reduced fat stores
- Reduced insulation / buoyancy

Minerals

- Calcium: weaker bones / reduced blood clotting / weaker muscles
- Iodine: poor growth / underactive thyroid gland / reduced energy
- Iron: less red blood cells / fatigue / low resistance to disease
- Potassium: weak muscle contractions / poor skin condition / unstable blood pressure
- Sodium: swelling due to fluid build up / cramps
- All of the above will result in being more prone to illness

[4]

[Total: 20]

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### Unit 3

#### Reasons and opportunities for participation in physical activity

- 3 (a) • People work fewer working hours / more flexibility in working hours  
• People work from home so can choose hours to work  
• Longer holiday periods  
• Increased unemployment / early retirement  
• Use of technology results in many having less physically demands jobs so more energy for leisure [2]
- (b) • It gives players and supporters from different countries the opportunity to meet and develop friendship  
• It unites people from different races, religions, cultures and classes in a shared interest  
• Gives the world's top athletes the chance to compete against each other. This encourages excellence / provides greater challenge  
• It spreads interest in sport and encourages more people to play / opportunity to watch the best performers / greater interest  
• Improved infrastructure / use of high quality facilities [2]
- (c) • Rule changes: introduced through media pressure as a way of making the sport more exciting and appealing, for example the tie break rule in tennis  
• Undermining officials decisions: use of instant replays in the studio can highlight official "on the spot" decisions as incorrect  
• Intrusion  
• The presence of cameramen / interviewers may impede or distract performers  
• Timing of events: media pressure and financial support of an event may dictate changes to timing of event to maximize audience  
• Popularity: if the media chooses to / not to feature certain events the sport may decline in participants and general interest / some sports are made more popular / creates greater awareness  
• Intrusion of individual privacy  
• Reduced attendance at the actual event  
• Promotes sport / increases participation / rewards have greatly increased  
• More people can see, hear and read about sport / changes in perception about certain sports  
• Some sports become more about entertainment, e.g. WWF wrestling  
• Creates sports stars which can have both a positive or negative effect on youngsters / more role models  
• Can inform and entertain  
• If seen on TV, sports can attract sponsorship, improving facilities, training and equipment / kits used to advertise  
• Standards of performance increases / greater pressure on performers to play well / more competitions  
[Candidates are awarded for both positive and negative responses to the question]

[3]



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- (d) • Legislation ensures equality  
• Females have been positively encouraged to take part in sport  
• Money for facilities, growth in popularity of events targeted at females / female only sessions  
• Development of role models  
• Recognition that women can compete in events that were inappropriate  
• Men and women competing on equal terms  
• More women become coaches / referees [4]

- (e) • Health / prevention of illness / relieve stress / improve body shape / physique / weight / look and feel better / possibly live longer /  
• Enjoyment / people may take up an activity for pleasure / enjoyment / excitement / experience develop skills  
• Social reasons / joining a team or club to meet or make new friends / to socialise with people you already know / prevent boredom / something to do that interests you  
• Business reasons / for example meeting with business associates on a golf course to leisurely discuss business matters / make new contacts / create a career  
Candidates can give up to three examples from one area [4]

**[Total: 15]**