

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

**MARK SCHEME for the May/June 2012 question paper
for the guidance of teachers**

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.

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Section A

- 1 Give an example of a basic skill. [1]**
- Running
 - Jumping
 - Throwing
 - Walking
 - Kicking
- 2 Give one feature of physical well-being. [1]**
- All body systems work well
 - Free from injuries and illness
 - Able to carry out everyday physical activities
- 3 Give one function of platelets in the blood. [1]**
- Makes blood clot/scab which allows a performer to continue playing
 - Speeds recovery to enable a performer to restart playing quicker
- 4 Why does age influence the type of sports that a person might take part in? [1]**
- Some sports have age restrictions/limitations
 - At a young age parental support is needed/transport/financial
 - Some sports become too dangerous as one gets older/too strenuous/physical contact
 - Interests change with age/younger people may like more adventurous activities/older people may prefer more sedate activities.
 - Younger people may be more influenced by changes in fashion/media/role models
 - The amount of time people have changes/working hours/schools age/retirement
- 5 Name one muscle that helps movement at the shoulder to occur. [1]**
- Pectorals
 - Deltoid
 - Trapezius
- 6 Describe two benefits for a student who attends a school's extra-curricular activities. [2]**
- Improving the standards of performance /skills
 - Has the opportunity to play competitive sports/play a variety of sports.
 - Improve social skills/meet friend/improve team work/develop leadership skills
 - Raise self esteem
 - Fun and enjoyment
 - Improve fitness/health

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7 Explain how television helps to improve people's knowledge of sport. [2]

- Shows sports from around the world/increases people's understanding of a wider variety of sports/develops greater understanding/encourage participation developing greater understanding
- Allows more detailed analysis/replays/slow motion/high definition television
- Show documentary programmes about sport//tutorials/sportspeople that increases awareness
- Use of high profile sportsmen/women to present and bring inside knowledge

8 Describe two ways that a warm up can reduce the chance of injury. [2]

- Better prepared mentally so more focused on the activity
- By practicing some basic skills adjust to the environment thus preventing injury
- Increase muscle flexibility reduces the chance on muscle injury/prepares muscles
- Loosens joints which decreases the chance of ligament and tendon damage

9 How can a sports centre improve opportunities for performers with disabilities?. [2]

- Provide opportunities for teams/competition/classes
- Improve access to the building/ramps/hearing loops
- Improve changing /shower/toilet facilities
- Hoists to swimming pools/lifts to access all area
- Campaigns to promote sports for performers with disabilities
- Employment of specialised coaching staff/coaching courses available
- Time allocated specifically for disability sports
- Links created with schools to promote involvement for younger performers
- Facilities made available/adapted facilities

10 Give two examples when good extension at a joint helps to produce a better performance. [2]

- Ensures greater reach, useful for basketball to rebound/netball to catch a ball at its highest point/tennis to reach for a ball
- Enables more aesthetically pleasing movement ideal in gymnastics pointing toes
- Generate greater power when striking a ball in tennis/putting the shot/kicking a ball in football

11 Explain two advantages of using Circuit Training as part of a fitness programme. [2]

- Provides variety of exercise which makes it interesting
- Adaptable to any sport
- Circuits can be designed to develop more than one aspect of fitness/skill
- An efficient way to use training time
- The circuit can be done indoor or outdoors
- Circuit can be done in a restricted area
- Circuits can include either no equipment or a wide variety of equipment
- Adaptable to an individuals level of fitness (work/rest ratio)
- Easy to overload/easy to make specific

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12 Describe three different ways that a Physical Education teacher can help promote participation in sports outside the curriculum. [3]

- Provide coaching and extra curricular clubs
- Provide opportunities to play fixtures
- Refereeing fixtures
- Provide visits to major events/bring in outside speakers/performers
- Establish links with local clubs/communities/PESCL strategy
- Give information to students
(this must be specific i.e encouraging an individual to join a sports club and must differ from any points already made)

[Total: 20]

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Section B

1 Factors affecting performance [1]

(a) Describe one function of the ribs.

- Protects the lungs and heart
- Gives shape to the chest/function in breathing/movement of rib cage
- Produces red blood cells

Answers must show the link to the ribs and not just be generic answers about the skeleton.

(b) Give two reasons why the poor demonstration of a skill could cause a problem for a performer. [2]

- Demonstration is incorrect/outcome incorrect/inaccurate/causes performer to learn skill badly
- Poor demonstration could result in injury
- Demonstration is of a complex skill and is too complicated to understand
- Demonstration is made right handed to a left handed performer and cause confusion
- Demonstration is made with performer unable to see easily/positioning of demonstration poor/cannot hear
- Coach has limited knowledge of the sport/area of the sport/not advanced enough to give accurate demonstration/de-motivates the performer
- Difficult to change when a skill has been learnt incorrectly

(c) (i) What are the physical signs that a coach might see in a performer who is over-aroused before a competition? [2]

- Unable to focus on the activity/instruction
- Physical effects – sweating /physically shaking (must be visible to the coach)
- Breathing faster
- Over aggressive

(ii) Describe one way that a coach might try to reduce this level of arousal in the performer. [1]

- Get the performer to relax by breathing deeply, massage, listening to music
- Visualisation, talk the performer through the game to allow them to see in their mind the way in which they can achieve a successful outcome
- Tell the performer to relax/calm down – different methods

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- (d) Name two activities. Describe a different component of Health Related fitness that would be essential for each activity. [4]**

Candidates can name any activity (no mark awarded) but the component named must be essential to the named activity.

One mark for one of the components listed below if appropriate to the named activity.

- Health related fitness: cardio vascular endurance/body composition/flexibility/muscular endurance/speed/stamina/strength.

One mark awarded for each description if applicable to the activity.

- Cardio Vascular endurance – ability to deliver oxygen to muscles would help in endurance activities i.e long distance running activities
- Body composition – the percentage of fat and lean tissue i.e. body typing will determine the suitability of activity i.e. someone who is an endomorph who find gymnastics difficult
- Flexibility – the range of movement around a joint i.e. gymnastics being able to complete movements such as the splits/able to complete advanced movements
- Muscular endurance – ability of muscles to repeat contractions without tiring e.g. a mid field player in football able to work the length of the pitch for the whole of the game
- Speed –the ability to move your body or part of your body quickly i.e. able to sprint fast; a javelin thrower being able to move his arm quickly and throw well
- Stamina – the body can keep going for long periods of time – i.e. running a marathon in good time
- Strength – the force muscles exert when they contract – i.e. weight lifting being able to lift heavy weights

- (e) Some drugs are regarded as being socially accepted. Name two such drugs and the long term effect of taking these substances. [4]**

Nicotine (smoking not given credit)

- Cancers/increase in heart rate/blood pressure /heart disease/reduction in the amount of oxygen in the lungs
- Performers cannot last as long in endurance activities/unable to work with a high level of intensity/unable to take part at all due to invasive treatment

Alcohol

- Coordination/muscles cannot work so hard as levels of glycogen reduce /dehydration/loss of drive/kidney and liver disorders
- Slows down reaction times/reduces agility/reduces the ability to play sports where high levels of coordination are required/lack of willingness to train and perform

Caffeine

- Anxiety/nervousness /insomnia/headaches/heart palpitations/ulcers/sleep disorders
- Tiredness so unable to perform well/difficult to achieve optimum arousal levels

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- (f) (i) **Name and describe a test that you could use to measure a performer's (Maximal Oxygen Uptake) VO_2 Max.** [4]

Marks can be given for the following tests:

- Multistage fitness test
- The 12 minute run/Cooper Test

One mark for naming the test and three for giving key features of the test.

Other recognised tests can be given credit if appropriate.

If an example of a VO_2 Max test is used credit can only be given if the description is a lab based test.

- (ii) **Name one activity you would use to bring about an improvement in the performer's VO_2 Max.** [1]

- Aerobics/cycling/running/swimming
Any example of endurance activities

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(g) Describe three changes to the circulatory system that take place immediately exercise starts and explain the different benefits of each change to the performer. [6]

One mark awarded for the change and one mark for the benefit

- Increase in the carbon dioxide levels in the blood
Benefit- Reduces onset of lactic acid and fatigue/speedier removal of waste
- The heart rate increases
Benefit – performer can work for longer/energy delivered to the muscles quicker
- Contracting muscles squeeze on veins to speed blood returning to the heart
Benefit – quicker removal of waste reduces the onset of lactic acid
- The heart fills up fuller/increase stroke volume/greater cardiac output
Benefit – more oxygenated blood reaches the working muscles to allow prolonged exercise
- Increase in contraction to pump more blood out of the heart/increase stroke volume
Benefit – increase in the amount of energy delivered to the working muscles
- Arterioles widen to ensure blood pressure does not increase
Benefit – reduces pressure on the heart
- Blood gets shunted to where it is needed/vasodilation and vasoconstriction takes place
Benefit – increase the volume of blood available to the muscles which increases the amount of energy available
- Blood gets hotter/shunted closer to the skin to enable cooling to take place.
Benefit – enables evaporation to take place which cools the body

[Total: 25]

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2 Health, Safety and Training

(a) State the World Health Organisations definition of health. [1]

- A state of complete **physical, mental and social well-being**

(b) Name the nutrient and a food source from which it can be obtained that would help repair muscle tissue. [2]

- Protein
Meat/cheese/fish/milk/nuts/butter

(c) Describe some of the safety considerations before starting an indoor sports activity. [4]

- Floor is clean and not slippery
- No sharp edges/nails raised in the floor etc.
- Lighting is good and not casting shadows
- Any equipment used is safe and in good condition/appropriate for indoor use
- Any equipment around the sides of the hall is safe
- The number of participants involved/space used is appropriate
- Level of supervision/age group/gender
- Temperature of the area being used is appropriate
- Use of specialist equipment i.e. cricket nets

(d) What can a performer do, other than warm up/cool down to reduce the chance of being injured during a game? [4]

Answers must relate to the responsibilities of the performer only

- Make sure that the skills required have been practiced/correct technique
- Know how to look after yourself to avoid unnecessary risks/do not make dangerous manoeuvres
- Make sure that you are physically/mentally prepared for the activity
- Do not play with an injury
- Wear correct clothing and equipment i.e. shin pads, gum shields/footwear/no jewellery
- Use appropriate safety equipment
- Follow rules/listen to instructions

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- (e) Name two long term benefits of exercise on the lungs and describe how they help improve performance. [4]**

Benefits

- Increased vital capacity /lung capacity
- Increase tidal volume
- Increased oxygen debt tolerance/improvement in gas exchange/increase in alveoli, capillairsation

Improvement (specific to performance)

- ❖ Vital capacity helps improvements by:
 - Increasing the volume of oxygen available to muscles
 - Allows muscle to work harder
 - Allows muscles to work for longer
 - Increases the amount of carbon dioxide expelled
 - Delays the build up of lactic acid in the muscles
- ❖ Tidal volume helps improvements by:
 - Able to deliver oxygen to the muscles quicker
 - Able to remove carbon dioxide quicker
- ❖ Increase oxygen debt tolerance
 - Able to tolerate oxygen debt for longer during exercise
 - Able to perform for longer
 - Maintain their performance for slightly longer
 - Able to recover quicker and repeat the activity

- (f) (i) Explain two ways that progression can be achieved for an athlete training for a long distance running event [2]**

Starting with easy activities

Start with an activity such as Fartlek Training which allows interval training so that there are regular recovery periods

Training becomes more difficult

Increase the intensity of training by starting to increase either the distance run or the length of the training run

- Training starts by being general
 - There would be little concern for times, training will be general
 - Training becomes more specific
 - Training will become more related to the distance of the event
- Quantity of training
 - In the early stages the training will be extensive to build stamina without focus on speed
 - Quality of training
 - The amount of training will reduce so that the intensity can increase and there can be more work on changing pace

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(ii) It is important that a performer is able to produce his peak performance at the right time. Explain three ways that this can be achieved. [3]

- Work on general fitness and basic technique
- Work on more specific areas of fitness and advanced skills
- Early low level competitions
- Develop areas of skills /fitness that has shown to be weak/tactical training
- Increase in the amount and level of competition
- Mix rest and training
- Ready for major/target competitions/periodisation
- Be psychologically prepared

[Total: 20]

3 (a) Describe one feature of a leisure activity. [1]

- Recreation is the voluntary activity that takes place during leisure time
- Activities that are done for fun and enjoyment

(b) Explain two ways that schools can support the participation of sporting activities within the community. [2]

- Dual-use facilities/sharing- providing facilities with the community/organising events
- Provide easier access
- Cheaper to use
- Curriculum that schools adopt may reflect some of the traditional activities of the community
- Local teams may work closely together/joint teams/share coaches/club links

Advertising can be given credit if it is specific and not just advertising sports.

(c) The Olympic Games in 2012 will be held in London. A great deal has been said about the legacy that will be left after The Games. Describe the non sporting legacy from hosting The Games. [3]

- Improvement in transport networks
- Improvement in hotels and restaurants/facilities for tourists
- Increase in housing (Use of Olympic village)
- Improvement in tourism organisations
- Improvement in the financial state of the country
- Increase in employment due to the continued use of facilities
- The regeneration of the area will be long lasting
- If the games does not go well London will be left with a high level of debt

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(d) Explain how the media can affect a high level performer. [4]

- Exposure through the media can assist sponsorship/loss of sponsorship
- Areas of the media can campaign for the inclusion of players into the national team
- Places pressure on performers that can either improve or hamper performance
- Places pressure on performers that can result in cheating/drug taking
- The intrusion of the media can distract a performer

Intrusion of privacy not sufficient, must show the effects of the intrusion.

(e) Describe the reasons why an individual might be able to reach the highest level of performance in their chosen activity. [5]

- Natural ability/innate ability/being skilled
- Access to a high quality coach/facilities
- Level of fitness
- Physique/body composition– is the performers somatotype suitable for the activity
- Age – is the performers age suitable for the activity/level of physical maturity differs in different sports i.e. a gymnast peaks at a younger age than a rugby forward/playing in the right age group
- Injury – a performer needs to be fully fit/free of injury to perform at the highest level/access to medical support
- Diet – does the performer access an appropriate diet for the activity/use of carbo loading/high protein diet
- Mental factors this would include level of stress/motivation/personality – some activities suit differing personalities/more determined/positive attitude
- Environmental factors – the weather is it suitable for a particular activity /altitude is more suitable for certain activities/pollution in certain areas of the world there are health risks that result from pollutants
- Support/family/school/sports associations/governing bodies. Could be in the form of finance/transport
- Having the time available to train/trains hard

[Total 15]