CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the October/November 2012 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.

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Cambridge is publishing the mark schemes for the October/November 2012 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

CAMBRIDGE
International Examinations

Section A

1
- Joins muscle to bone [1]

2
- Ensure sufficient hydration prior to event
- Replenish lost water through sweating during the course of the event
- Replenish water lost immediately after performance [1]

3
- Name **one** skill-related factor.
- Co-ordination
- Balance
- Agility
- Timing
- Fast reactions
- Explosive strengths [1]

4
- Pain
- Nausea / shock [1]

5
- It helps the body lose heat [1]

6
- To make friends
- To meet new people
- Social interaction with other people
- Membership of a club or society
- Co-operation [2]

7
- Fast twitch
- Slow twitch [2]

8
- Ability to cope with stress
- Ability to control emotions
- A feel good factor about oneself [2]

9
- To lose weight and therefore be able to compete in a certain category e.g. Judo / masks other drugs
- Risk of dehydration, headache, weakness [2]

10
- Helmets protect the head and face
- Pads to protect the legs
- Gloves to protect the hands
- Spiked footwear to prevent slipping [2]

11
- Males have longer bones providing greater stride length
- Males have larger muscles
- Males can generate more power [2]

12
- Young people: prefer play, less organised activity, fun and enjoyment, no rules
- Teens: introduced to more structured activity through PE, organised games and activities, rules of play
- Middle-aged: leisure activities, may be bound by rules if competitive and structured, possible tendencies towards leisure activities, walking for example
- Elderly: more sedentary activities not requiring high levels of fitness
- Reduced levels of skill related fitness; speed, stamina, flexibility and strength restrict ability to take part in certain activities
- Reduced levels of physical fitness;
- Elderly people may have limited access to competitive opposition
- Elderly people may be encouraged to take part in activities with special activities / reduced rates
- Young people may have problems with transport / access to activity without relying on adults
- Interests change with age [3]

[Total: 20]

Section B

Factors affecting performance

B1 (a) (i)
- Intrinsic

(ii)
- To gain appreciation from external sources such as; receiving a cup / medal / prize / financial gain / fame [2]

(b)
- Transport of blood, water and nutrients around the body
- Removal of waste products
- Temperature control, when hot the blood absorbs the heat and takes it to the surface of the skin
- Radiation, blood vessels expand at the skin surface to release heat
- When cold the blood vessels contract so less blood flows to the surface and less heat is lost
- Antibodies carried in the blood help to fight infection
- Blood clotting to seal cuts
- Increased stroke volume
- Increased cardiac output
- More efficient heart / lower resting heart rate
- Muscles supplied with O_2 quicker/ muscles tire more slowly [3]

(c)
- References to SMARTER credited with appropriate explanation
- Helps to prepare mentally for a performance as you know precisely what you are aiming for
- Goals motivate you to work hard and achieve
- Provides a direction in training
- Provides a signpost for your progress
- Can make you feel more in control and reduce anxiety
- Achieving a set goal increases confidence [3]

(d)
- Enable performer to continue participation beyond normal threshold leading to exhaustion, injury, overuse
- Injuries could be aggravated
- Injuries could take longer to heal in the long term
- Side effects include susceptibility to heat stroke / hypothermia
- Over aggression
- Violent behaviour
- Addiction
- Drowsiness
- Organ damage [5]

(e) **Visual guidance.** You can observe demonstrations, video, posters etc. Especially important when learning a new skill
Verbal guidance. Guidance you can listen to. The coach puts into words and explains what needs to be done to be successful. Useful as instructions can be specific to the performance and faults referred to and put right
Manual guidance. Useful when a skill is dangerous or complex. Guidance you can "feel" for example;

- a coach may hold or support you through a movement in gymnastics
- a device could be used to assist you for example a float in swimming
- a device to prevent injury for example a harness when attempting a somersault on a trampoline [6]

(f)

- **Cardiovascular endurance / stamina:** The ability of the heart to pump blood and deliver O2 to working muscles needed to sustain performance
- **Muscular endurance:** the ability of the muscles to contract over a relatively long period of time without tiring. Important for long distance events such as swimming, running distance or to maintain performance in a team game such as the full 90 minutes in football

- **Strength:**

1. Dynamic strength required to start and maintain movements of the body for example the start of a sprint race and then maintaining the effort until full speed is reached
2. Explosive strength required when a high amount of force has to be applied quickly for example shot putting
3. Static strength required when applying strength to a static or fixed object for example pushing in a rugby scrum or pulling as in tug of war

- **Flexibility or suppleness:** The range of movement at the joints. This is important as it reduces the chance of muscle injury and allows for a full range of movement improving performance. Beneficial to the performer in activities such as hurdling, gymnastics, diving and swimming
- **Speed:** The ability to move the body and limbs quickly. Needed for speed of movement for example chasing a ball or throwing in rounders'
- **Body composition:** Different body types can gain an advantage in certain activities. References to somatotypes, description and advantages to be gained required [6]

[Total: 25]

Health, safety and training

B2 (a)
- Movement of glycogen stores to muscles requiring energy
- Prepares body for exercise
- Blood transported to working muscles
- Gradually increases heart rate / breathing rate
- Warms muscles [2]

(b)
- Strain; an injury to a **muscle or tendon** which could worsen if adequate rest is not taken. Muscle could pull or tear. Usually caused as a result of overuse/ not fully prepared for the activity [2]

(c)
- Eat a balanced diet
- Take regular exercise
- Avoid drugs and pollutants
- Develop a positive attitude towards physical recreation [3]

(d)
- Age; most school competition is based on age, however it is possible that children of the same age have different physical development which can be both unfair and unsafe
- Size and weight; events such as weight lifting and rowing have weight categories to make competing fairer. Events such as boxing and judo have weight categories to make contests fairer and safer
- Gender; some sports accept mixed sex teams for example badminton, to compete against one another. Generally sports are single sex to avoid injury
- Skill; in karate and judo coloured belts are awarded to symbolise level of performers skill. Only equally matched performers compete for safety reasons. Golf has a handicap system to even out competition between players of different abilities [3]

(e) (i)
- Improves the strength and speed (power) of muscle contraction [1]

(ii)
- Performers who rely on power
- Jumping in volleyball, basketball etc
- Benefits all games and racket players [1]

(iii)
- Involves a series of explosive movements, bounds, hops, jumps on to and off boxes.
- Leaps, skips, clap press ups, catching a medicine ball are all designed to improve muscular power
- Muscles are stretched before they contract storing elastic energy so that when they next contract extra power is produced
- Plyometrics is a method of training muscle elastic strength and explosiveness to enhance athletic performance
- Standing based jumps performed on the spot (low intensity) - tuck jumps, split jumps
- Jumps from standing (low-medium intensity) - standing long jump, standing hop, standing jump for height
- Multiple jumps from standing (medium intensity) - bounds, bunny hops, double footed jumps over low hurdle, double footed jumps up steps
- Multiple jumps with run in (High intensity) [2]

(f)
- Carbohydrate; fast release energy providers, easy to digest, rapid conversion to glucose as source of energy, if not required immediately stored as glycogen ready for processing in the muscles and liver
- Proteins; consisting of amino acids needed for growth and repair of muscle tissue. Production of enzymes and amino acids
- Fats; important for production of slow release energy. Stored as a layer beneath the skin and acts as an insulator keeping body heat in and external cold out. Acts as a shock absorber should we fall.
- Water; two thirds of body weight consists of water so it is important to maintain balance. Prevents onset of dehydration during exercise. Helps regulate body temperature
- Fibre; assists the digestive system maintaining body health and fitness. Reduces appetite making you feel "fuller" preventing overeating and weight gain
- Vitamins; regulate bodily processes and chemical reactions. Protect the body and enable growth and maintenance of bones, skin and gland. Help with digestion. Resist bacteria and disease and help heal wounds
- Minerals; calcium, assists bones and clotting of blood. Iron, assists the production of haemoglobin. Iodine, important for the health of the thyroid gland which produces hormones [6]

[Total: 20]

Reasons and opportunities for participation in physical activity

B3 (a)
- To meet new people
- To develop friendship
- To gain confidence [1]

(b)
- Fees and subscriptions
- Fundraising events
- Grants
- Sponsorship
- Lottery funding [2]

(c)
- Sponsorship can be a means of advertising
- Popular and televised events make the sponsor's name and product well known
- Successful individuals and teams make sponsors names well known
- Certain sponsors become associated with healthy lifestyles and high-level performances
- Sponsors may receive tax benefits by giving money to sports
- Sponsor`s business opportunities improve / increase. Corporate opportunities [2]

(d)
- Events such as Test cricket, Wimbledon, Olympics, Football World Cup all generate large audiences
- Sports programmes attract viewers who may be interested in the sport but unable to attend the event
- Major events attract advertisers which raises revenue for the TV companies
- Awareness of minority sports
- Advertising generates revenue
- Creation of role models which further promote sport
- New sports generate interest, for example Super bowl
- Sport can be viewed from comfort of own home
- Easy access to TV
- Causes an increase in participation [3]

(e)
- Developments made by the private sector (commercial ownership) in order to make a profit from a growing market
- Public sector ownership as a social obligation. Run by local authorities and paid for by taxes, community charge etc.
- Increased demands for personal trainers who advise individuals for a fee
- Growing awareness of the importance of health and fitness
- To meet the demands of the public [3]

(f)
- Social attitudes; it may be difficult for some women to commit time to sport if they have "home" responsibilities
- Finance; in most cases sportswomen do not receive the same amount of sponsorship or prize money as their male counterparts
- Role models; for boys there are a multitude of role models in a wide range of sports, football, rugby, athletics etc. there are far fewer for females
- Coaching; there are more men than women coaching women's sports teams and individuals
- Media coverage; there is less media coverage of women in sport which means a lower profile possibly also linked to sponsorship. There are fewer female sports presenters or involved in the media
- Physiological factors; women are generally lacking in speed, strength, stamina etc than men making male sport more exciting to watch
- Cultural issues [4]

[Total:15]