UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIO

International General Certificate of Secondary Education

MARK SCHEME for the October/November 2

for the guidance of teachers

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 must be read in conjunction with the question papers and the report on the examination.

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Section A

1
- to protect internal organs such as the heart and lungs from prevent participation
- blood production

2
- encourage a warm up to place
- check playing area / equipment / risk assessment / ensure ag
- provide qualified officials / play by the rules
- first aid provision [1]

3
- time in which a person can spend as they wish when not working or sleeping [1]

4
- cooper test / 12 minute run
- multi stage fitness test / bleep test [1]

5
- take gentle exercise on a regular basis
- ideally exercise for 4 times a week for at least 20 minutes
- start gently and increase intensity gradually
- do not over exercise / over train
- get fit to play sport / don't play sport to get fit!
- walk or cycle instead of motor transport
- use stairs instead of lifts.
- use of FITT process / design a planned programme / set goals [2]

6
- mesomorph
- muscular / strong / powerful / essential qualities for speed [2]

7
- traditional roles of females, housewife
- family commitments
- limited transport (use of family car)
- limited crèche / child care
- costs
- cultural / religious attitudes and restrictions
- time owing to other commitments
- single parent
- limited opportunities [2]

8 ligaments:
- attach bones together (bone to bone)
- stabilize joints
- ensure joints are kept in place
- elastic to allow range of movement

tendons:
- connect the local muscle to the bone
- allows for flexibility and stretch
- elastic
- store and release energy

9
- flexibility: the range of movement around a joint
- examples must be referred to a particular sport and describe movement that enhances performance.

references must refer to a particular example:
1. stretching to reach higher to catch a ball in netball
2. increased stride length when sprinting
3. reducing the risk of injury acceptable, however preventing injury is not accepted [2]

10
- extra curricular activities
- enlist assistance of specialist coaches
- dual use facilities (use of school / use of local clubs)
- teams
- visiting sporting stars / celebrities / former pupils
- local area co-operation / shared schemes
- create links with local clubs [3]

11
- indirect payments / sponsorship
- scholarships to athletes / family / coach
- employment related
- availability and access to training / facilities
- trust funds / grants / "Sports-Aid" [3]

[Total: 20]

Section B

Factors affecting performance

B1 (a)
- speed / speed of reaction
- agility
- co-ordination
- balance

(b)
- increased heart rate: enables more O_2 to be pumped to working muscles to supply energy for movements
- breathing rate increases and becomes deeper: Inhalation of more O_2 to feed working muscles
- perspiration / sweating: In order to cool body / prevent overheating [2]

(c)
- **transport**: transports essential elements around the body in the bloodstream such as O_2, nutrients, water and waste
- **temperature control**: moves blood towards the skin surface thereby assisting in cooling
- **protection**: transportation of antibodies in order to fight disease. Blood clotting for example, seals cuts [3]

(d)
- bone width and density is increased
- cartilage protects the ends of bone
- cartilage thickens improving shock absorption in the joints
- muscles, tendons and ligaments are strengthened around the joints
- muscles adjust to greater workload
- increased range of movement at joints / increased flexibility
- muscles increase in size (hypertrophy)
- increase in fast / slow twitch fibres (depending on type of training)
- muscles can work harder for longer [3]

(e)
- red blood cells are taken out of the body / blood frozen
- body compensates for this loss
- blood cells injected back into body meaning O_2 capacity is unfairly increased
- increased capacity to transport O_2
- simulate high altitude training without expense or effort
- unfair advantage
- side effects include allergies / virus / kidney damage

1 mark awarded for the danger [4]

(f) (i)
- intrinsic / self motivation: comes from own inner drives. playing for fun or enjoyment, satisfaction of playing well, pride in winning and enjoyment playing with others
- extrinsic motivation comes from rewards and external pressures and influences. Playing to win games, trophies, medals. Pleasing others with our performance. [2]

(ii)
- thinking positively; confidence in own ability. telli enough and should do well. gain confidence f supporters
- mental rehearsal; develop the ability to picture you your sport, example envisaging a ball being kicked b a clear image in the mind of a successful performanc
- focusing: concentration on the key points of the skil such as noise, spectators, opponents, weather and p
- relaxing: achieving the ideal balance between arous of either will lead to a reduced performance. reduc with a gentle warm up or massage. personal preferences such as listening to music or sitting quietly.
- references to Goal setting will be accepted if relevant to affecting anxiety) [4]

(g) (i)
- physically more developed / stronger
- more likely to take part in aerobic activity / sport in general
- competitive nature of males [1]

(ii)
- compare test results with other performers of same ability
- develop profiles of elite performers
- provides information which may affect the level of performance
- assess effectiveness of training methods
- allows adjustments of training methods to be altered
- highlights areas of weakness
- allows the physiological potential of the athlete to be assessed
- assess progress after illness / injury
- helps to set targets
- helps to motivate a performer [5]

[Total: 25]

Health, safety and training

B2 (a)
- all body systems are working well
- free from illness and injury
- able to carry out everyday physical tasks

(b)
- a process which uses O_2 provided by the heart and lungs
- summarised by the equation;
- GLUCOSE + $O_2 \rightarrow CO_2 + H_2O$ + ENERGY
- as you exhale you breathe out the carbon dioxide through your lungs, while water is lost through sweat and urine or air you breathe out
- providing the muscles continue to be provided with enough O_2 aerobic exercise can continue for a long period of time, for example Marathon running [2]

(c)
- use of correct clothing and safety equipment
- use equipment correctly and for the purpose it was intended
- follow safety arrangements
- know how to support and assist others / techniques (for example binding correctly in a rugby scrum)
- follow the rules / correct codes of behaviour
- warm up / cool down
- participants being responsible for their own actions / fit for the event. [2]

(d)
- increase the number of activity stations
- increase the time spent at each station
- increase the number of repetitions at each station
- complete a greater number of circuits
- increase any weight or resistance used at a particular station
- decrease any rest periods [3]

(e)
- strain (pulled) muscles / tendon where tissue is torn caused by sudden overstretching. Pulled hamstrings are common in football when suddenly extending the leg to reach a ball
- sprain where the ligament has been stretched or torn because of violent twisting such as turning quickly in hockey and the players studs lodge and prevent turning movement
- dislocation when a bone is pulled out of its normal position for example the humerus pulled from the shoulder joint, occurs in contact / collision sports such as rugby [2]

(f) (i)
- carbohydrate 55%
- fats 30%
- proteins 15% [1]

(ii)
- **carbohydrate**: bread / rice / pasta / sugars. Provide energy to sustain performance
- **fats**: animal products / fish / oils. In addition to stored energy insulates and protects the body
- **proteins**: meat / fish / eggs / poultry. Helps the body to grow and repair during times of injury [3]

(g)

- **cardiovascular endurance**: the ability of the heart and l long period of time, stamina for endurance or prolonge "extra-time" in football. We can improve by taking part heart between 60% to 80% of its maximum rate for a mi the time as we become fitter
- **muscular endurance**: the ability to use our voluntary m We can improve muscular endurance by training maximum) at speed with a high number of repetitions (20
- **speed**: the ability of our body or part of the body to mov race or a smash in tennis. We can improve by increasing weight training; stronger muscles give more power and therefore speed. Improving reaction time and sprint starts. Agility training, improving skill to become more efficient.
- **strength**: the amount of force a muscle can exert against a resistance for example weight lifting. We can improve by training with heavy weights (80%–100% maximum) using a low number of repetitions.
- **flexibility**: the range of movement possible at a joint, also known as mobility or suppleness (acceptable) for example the ability of a gymnast to perform the splits. We can improve flexibility by repeatedly stretching our muscles and tendons and extending ligaments and supporting tissues beyond their normal range of movement for 10–20 seconds and repeating after a short rest.

Credit can also be given if candidates use components of skill related fitness with appropriate examples [6]

[Total: 20]

Reasons and opportunities for participation in physical activity

B3 (a)
- play is for fun / haphazard / made up / informal
- sport is organised / competitive / exciting / attracts s requires physical activity

(b) raise money through:
- increase subscriptions / fees
- sponsorship
- fundraising events
- grants.
- increase number of members [1]

(c)
- people have shorter working days / greater flexibility in working lives
- increased unemployment
- increases in holiday entitlement
- sports facilities available in the workplace
- technology in transport has help travel / spend less time travelling.
- increased use of domestic, time saving devices
- advertising activities events through the internet [2]

(d) appropriate country and sport (1 mark)
valid / justified reason (1 mark)

examples could include:
- Kenya / Ethiopia – middle / long distance running
- Brazil – football
- Cuba – boxing
- alpine countries – skiing

reasons include:
- geographical. terrain (skiing / climbing). coastal (sailing / surfing). altitude (running)
- climatic: snow (skiing)
- financial: cost of equipment (polo / motor racing)
- traditional: number of population taking part in nation's event (skills pyramid)
- cultural: traditional cultural sports, cricket in the commonwealth [2]

(e)
- wider variety of activities available and a greater willingness to adapt sports to meet "peoples" needs
- improvement in facilities for participants and spectators
- increased number of coaches ready, willing and able to become involved, coaches specialising in people with disability
- open competitions
- disability games alongside able-bodied / greater acceptance
- increase number of role models
- increased media coverage / sponsorship [2]

(f) individual:

- costs: transport / accommodation / equipment / eve scholarships
- pays to be able to train and compete full time
- promotes development for up and coming stars / raises c
- sponsor
- "free" advertising
- image, especially when associated with winners
- scholarships, university reaps the benefit of successful st
- tax and hospitality: sponsors do not usually have to sponsorship. free tickets to events to impress associates
- corporate image [3]

(g)

- sport accounts for a large percentage of viewing time allocation
- event and match analysis allows the viewer to see events in fine detail, slow motion, replays, coaching points
- television allows viewers to watch major events and competitions / reduces attendance / encourages participation
- tv companies contribute financially
- tv companies can dictate owing to scheduling / financial power which and when sports are shown
- rules, clothing, timing of events can be changed
- positive, more coverage and negative poor / no coverage of minority sports
- pressure on athletes / teams with large audiences [4]

[Total: 15]