UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIO

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2010 quest

for the guidance of teachers

0413 PHYSICAL EDUCATION

0413/12 Paper 12, 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
- arranges meetings;
- keeps minutes of the meeting;
- may have responsibility for club fixtures;
- may have responsibility for membership;
- deals with correspondence/letters/documents/paper work;

Candidates can name an appropriate administrative task.
No mark for financial related tasks or following the instructions of

2
- Limited channel capacity means that it can only process a limited amount of information at any one time.
- The system could get overloaded and cause confusion/processing it all at once is too confusing.
- If skills are complex they need to be broken down into smaller components if not practice is difficult/easier to understand.
- Skills will not easily go into the long term memory if practice is difficult.
- Allows you to focus on the important parts.

No mark for easier to learn new skill [1]

3
- seems to have time to execute skills/more accurate/more consistent/efficient;
- seems to be in the right place at the right time/use right skills at the right time;
- require less effort than a less skilled performer to complete tasks;
- less likely to cause injury to themselves or others;
- has a high level of success;
- adapts skills to different situations; [1]

4
- Moves a limb or limbs back towards the central axis of the body. [1]

5
- enable players to lose weight quickly/make weight categories;
- masks the taking of illegal drugs by flushing them out of the body;
- releases water from the body;
- helps maintain muscle tone;
- gets rid of toxins;

Answers must relate to the physical effects

No mark for improves performance [1]

6 Increases in:
- workload/works harder than usual;
- frequency of exercise;
- intensity – how hard you work;
- time that is spent exercising;

Give credit for any examples of the above. [1]

7
- provide activities to local communities;
- meet local demands/what the community wants;
- easily accessible to the local community;
- provide additional activities that do not already exist;
- cheap or free;

Do not accept facilities. The question assumes facilities are alread

8
- There would be an increase in the amount of blood pumpe
  heart rate.
- There would be an increase in the amount of oxygen delivered to muscles/able to go on for longer/increased stamina.
- There would be an improvement in gaseous exchange.

Answer must show an increase/improvement. [1]

9
- The interest of parents and other members of the family.
- Sports or sports stars that are frequently on the television/media coverage/role models.
- Peer pressure.
- Access – transport and availability.
- Experience of the school curriculum/activities after school.
- Fun/enjoyment.

No mark for costs/physical size. [2]

10
- It helps remove unabsorbed foods and other waste products.
- Water is a key to chemical reactions.
- An essential part of blood which carries oxygen and nutrients around the body.
- Stops the body from overheating.
- Allows hydration/replaces fluids/stops headaches, dizziness, etc.
- Helps maintain muscle tone.
- Gets rid of toxins.
- Keeps performers healthy. [2]

11
- Answers must relate to the named activity.
- An example could be:
  hill walking – physically being able to walk for a prolonged period; coping with the changes in the environment – ability to read a map – being able to plan with safety in mind
  Include the responses dangers/unknown surprises.

Answers must be adventurous and not just outside activities.

1 mark for activity and 1 for the challenge. [2]

12
- Changes to working patterns allow people to take part in sp than just at weekends.
- People have more holiday time that can be used for sporting
- Sporting holidays give people opportunities to participate – sa
- Unemployment.
- Increased workload can reduce opportunities.
- Early retirement.

Answer must relate to work rather than family demands.
No mark for stress.

13
- Relaxation of rules to allow access – in certain cultures women are not allowed to wear swimming costumes but could take part if they are allowed to cover arms and legs.
- Affordable sports.
- Providing sports that are traditional in different cultures.
- Provide sports that are popular.
- Ensure good access for disabled participants to sports centres.
- Provide coaching for all levels of performers.
- Provide equal access and opportunities for women.
- Provide crèche facilities that allow women to participate.
- Provide opportunities through competitions/tournaments/events/local teams. [2]

14
- Schools' sport have a pyramid structure that allows elite performers to play internationally.
- School based competition at all levels.
- Scholarships allow students to attend university and continue to study and play at the highest level.
- Schools offer a variety of examination courses that create a high level of understanding of sports.
- Schools have links with clubs that allow students to play outside the school environment.
- Schools allow access to high quality facilities/equipment.
- Schools can provide access to top quality coaching and teaching.

No mark for PE lessons must indicate extra/higher. [2]

[Total: 20]

Section B

Factors Affecting Performance

B1 (a)
- make the blood clot/forms a scab;
- they stick together in cuts and make fibres grow;
- prevents infection;
- stops bleeding;

(b) (i)
- endurance events (cycling/rowing);
- sports with an endurance element;
- long-distance running events; [1]

(ii)
- The number of red blood cells increase.
- Haemoglobin concentration increases.
- Initial increases in heart rate/stroke volume.
- More efficient use of oxygen/more used to working with less oxygen/benefits when returning to sea level.
- No mark for more oxygen. [1]

(c) (i)
- the femur [1]

(ii)
- quadriceps – 4 muscles
- hamstring – 3 muscles
- gluteals – 3 muscles [1]

(iii)
- muscles work in pairs;

Credit should not be given for just naming the movement.

Movement – flexion/bending the knee
- muscular contraction takes place that causes the hamstring to shorten;
- hamstring acts as the prime mover;
- the quadriceps lengthen;
- the muscle tendon at the point of origin is pulled towards the point of origin;
- this movement draws the leg back;

Movement – extension/straightening the leg
- the process reverses;
- the hamstring lengthens;
- the quadriceps becomes the prime mover;
- the gluteals help straighten the leg; [4]

(d) Inhaling
- the intercostals muscles contract;
- the rib cage is pulled upwards;
- the chest expands;
- the diaphragm contracts, causing it to flatten;
- this makes the chest larger;
- the decrease in air pressure allows air to move into the lu

Exhaling
- the intercostals muscles relax;
- the rib cages lowers;
- the chest cavity gets smaller;
- the diaphragm relaxes causing it to bulge upwards;
- the lungs become compressed thus forcing the air out of the lungs;

- breathing becomes faster/heavier/CO_2 being breathed out is increased/gaseous exchange becomes quicker;
- the amount of oxygen breathed in increases;

No mark for heart related responses. [3]

(e) (i) Candidates may describe the Yerkes–Dodson Theory and credit should be given.
- arousal is low the quality of the performance is poor (can give examples of reasons for the performance is poor);
- when arousal is at an appropriate level the performance will be at the optimum level (examples accepted);
- when arousal is too high performance is poor (examples accepted); [3]

(ii)
- lack of concentration;
- little energy;
- over aggressive;
- easily distracted from the task/make mistakes;
- no credit given if examples used in part **(i)** are also used in part **(ii)**; [1]

(iii)
- When you are frightened or nervous adrenalin is squirted into the blood.
- It makes the heart beat faster so the athlete is ready to perform.
- There is an increase in the amount of oxygen and glucose to ensure muscles are ready for action.
- Blood vessels in the gut constrict shunting more blood to the muscle.
- It makes muscles tense, ready for action.

Answer must relate to the physical effects of adrenalin and not just the effect on performance. [2]

(f) (i)
- Health related fitness allows a person to cope with th
- Health related fitness could be described as general
- Skill related fitness is specific to a sport or activity.

(ii) Health Related
- Cardio vascular endurance
  The ability to perform for a long period of time, cr runner.
- Muscular endurance
  The ability for muscles to repeat contractions without to be able to maintain pace throughout the race.
- Stamina
  The ability to keep going for long periods of time – a mid-field player able to play for the whole game.
- Strength
  The maximum force that can be developed by muscles in a single contraction – the ability to putt the shot a good distance, or weight-lifting heavy weights.
- Flexibility
  The range of movement at a given joint – a gymnast would be able to execute complex movements, a hurdler is able to bring his trailing leg through to ensure good leg speed. To be able to run quickly over the hurdles.
- Speed
  The ability to move a body part quickly – a javelin thrower's ability to bring his throwing arm through the throwing action quickly to throw further, this applied to any throwing action. [2]

Skill Related
- Explosive strength or power
  The ability to life weight with speed – weight lifter/prop forward in the scrum.
- Agility
  The ability to change direction quickly – a footballer able to dribble the ball at pace, a rugby player changing direction to beat an opponent.
- Balance
  The ability to hold a position without falling – holding a gymnastic balance.
- Co-ordination
  The ability to move the body parts smoothly and accurately in response to your senses – returning a shot in tennis, catching a ball at the line out in rugby.
- Fast reactions
  Reaction time – the speed of reaction to a stimulus – a sprinter leaving the block at the start of a sprint race, a goalkeeper reacting to a shot at goal.
  Movement time – the amount of time it takes to initiate a movement and complete.
- Timing
  The ability to act at just the right time. [2]

(iii)

- Balance – stork test
  1. blindfold subject
  2. place hands on hips
  3. lift one leg and place against the knee of the op
  4. time taken as long as subject is stable
- Agility – Illinois agility run
  1. set out a course using cones
  2. the subject sprints to the first cone
  3. subject weaves in and out of cones without touc
  4. sprints from the last cone to the end

  If candidates provide a diagram credit should be given.
- Fast Reactions – plate tapping test
  1. stand in front of a table with two rubber plates and rectangular disc on the surface
  2. place non-preferred hand on the centre rectangle
  3. count how many times the subject can move his hand between the two discs without moving his other hand from the centre rectangle in one minute
- Explosive power or strength – vertical jumps
  1. stand sideways to a wall
  2. mark a point at stretch height
  3. jump and touch/mark the highest point of the jump
  4. measure the distance between the two points [2]

[Total: 25]

Health, Safety and Training

B2 (a)
- build/strengthens muscle;
- repair tissues;
- makes blood;
- used for energy when carbohydrates and fats run out (ac

(b) The answer should relate to situations that could result in training.
- If the performer lifts weights that are too heavy injuries m
- Lifting weights that are too heavy will result in the use of poor technique resulting in no improvement or strain injuries.
- If overload is not producing progress boredom can set in and motivation lost.
- Too many reps can result in soreness and joint pain that results in the need to stop training. [2]

(c) (i) Strain
- a soft tissue injury to a muscle;
- a tear in a muscle or tendon;
- a sudden sharp pain at the point of the tear;
- swelling/bruising/limping;
- stiffness and sometimes cramp;

Credit can be given if the candidate gives an example as the location – naming a muscle/tendon. [2]

(ii) RICE will not be given credit, the answer requires a description of the application of one of the components
- Rest – the player must stop all movement and sit or lay down.
- Ice – cool the injured area place ice on the injured area covered in a cloth so it does not come into direct contact with the skin.
- Compression – bandage the injured area firmly using a crêpe bandage.
- Elevation – place something under the injured area so that it is higher than the heart to reduce blood flow to the injured area. [1]

(d) (i) Advantages of Fartlek Training

- the change of pace helps to recreate the different sp
- variety can be introduced by cycling, etc. to add vari training method;
- overload can be increased with ease;
- easy to organise a training programme;
- easier to relate to stamina;
- easy to adapt to the needs of the athlete;
- change of terrain;

Disadvantages of Circuit Training

- it can take a long time to set up;
- difficult to focus a circuit just on one aspect of fitness;
- a circuit takes a great deal of planning;
- tends to be strength developing activities; [3]

(ii)

- difficult to tell how hard an athlete is training;
- it requires determination on the part of athlete to ensure the intensity during training;
- needs space; [1]

(e)

- the experience of the group in that particular environment;
- the experience of the leaders to undertake the walk;
- qualifications of the leader which includes first aid/level of supervision;
- the appropriateness of the walk in relation to age, health, etc.;
- the distance of the walk in relation to the time available;
- the suitability of the equipment being used – clothing/footwear;
- first aid equipment/water, etc.;
- recent survey of the area to ensure walk is still suitable including access to up to date maps/risk assessment;
- methods of communication in case of injury – mobile phone;
- weather reports immediately prior to setting off on the walk;
- planned route with emergency routes off the hills in case of injury; [4]

(f) 100m

- The event uses the anaerobic systems.
- Energy is required quickly.
- Oxygen cannot reach the muscles quickly enough to pro
- Energy is only required for a few seconds with high level
- Muscles contract very powerfully/explosive movement.

400m

- the athlete will start the run using anaerobic respiration fo
- respiration changes to aerobic;
- uses a combination of energy systems;
- oxygen reaches muscles enabling aerobic contraction to take place;
- there is an increase in pace during the second part of the race which results in an increase in demands for energy;
- in the final sprint the anaerobic system will be used again;

Marathon

- the entire race can use aerobic respiration;
- the race is generally even paced;
- oxygen can be supplied to muscles at a constant pace;
- lactic acid is built up very slowly;
- carbon dioxide is excreted through the lungs which helps prevent lactic acid being built up;
- if there is a sprint at the end of the race the athlete will use the aerobic system;

Max of two marks per event [6]

[Total: 20]

Reasons and opportunities for participation in physical educatio

B3 (a) (i)
- Olympics;
- World Cup in football, rugby;
- Commonwealth Games;

(ii)
- build new stadia that can host matches, events;
- provide training centres;
- increased publicity will increase interest in the sport;
- increase in funding can provide improved opportuniti
- improvements in coaching structures to improve opportunities of success;
- traditionally the host nation has a higher than normal level of success;
- increases the level of interest and participation;
- host nation does not have to qualify; [2]

(iii)
- improved international standing of the host nation;
- improved road network;
- improved public transport;
- improved international travel network – ports, airports;
- communication centres and an improvement to television and radio technology;
- additional housing if an Olympic village has been developed;
- increase in the number and quality of hotels;
- increase in the number and quality of restaurants;
- increase in the economy due to the number of visitors;
- greater wealth due to the increase in employment opportunities;
- improvement in the economy due to companies working on the development of the sites;
- improvement in the range of sporting opportunities due to the increase in facilities;
- feel good factor;

Answer must not be sport related. [3]

(b) (i)
- The cost of the event may be too great without a sponsor meeting the costs/provide equipment/kit/transport.
- A sponsor will bring a high level of advertising/better promotion.
- An event linked to a major sponsor will help attract better performers/and result in more people watching the event.
- If the event makes a loss the sponsors will cover the costs. [2]

(ii)
- The event may not link with the company image.
- The event/people may have a poor reputation and this could reflect on the company.
- The event may not attract publicity or television coverage.
- The cost may be too great.
- If the event has a history of poor behaviour/failure the company may not want to be linked.

Must give reason – not to accept don't like/background [2]

(iii)
- high level of advertising/improve image;
- associated with a popular event improves the view of the product;
- often tax benefits;
- can use the event as a corporate event for customers; [1]

(c) (i)
- sport has become a high profile activity;
- sport is televised from around the world live/improv events;
- the range of sports televised has increased greatly;
- sports personalities have become celebrities and attr
- in order to attract bigger audiences television comp to televise events;
- greater interest in sports;

(ii)
- sports played at times that suit television companies;
- rules are altered to make them more suitable for television audiences;
- sports are adapted for television coverage;
- television coverage has led to changes in the use of technology for referring;
- kit changes with names of shirts to help identify players;
- some sports are played just for entertainment i.e. wrestling; [2]

[Total: 15]