

**CAMBRIDGE INTERNATIONAL EXAMINATIONS**

**International General Certificate of Secondary Education**

**MARK SCHEME FOR the June 2002 question papers**

**0413 PHYSICAL EDUCATION**

**0413/1**      Paper 1, maximum raw mark 80

These mark schemes are published as an aid to teachers and students, to indicate the requirements of the examination. They show the basis on which Examiners were initially instructed to award marks. They do not indicate the details of the discussions that took place at an Examiners' meeting before marking began. Any substantial changes to the mark scheme that arose from these discussions will be recorded in the published *Report on the Examination*.

All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes must be read in conjunction with the question papers and the *Report on the Examination*.

- CIE will not enter into discussions or correspondence in connection with these mark schemes.

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**Section A**

- |           |   |        |
|-----------|---|--------|
| <b>1</b>  | Long distance running/marathon, rowing,<br>any activity that shows sustained activity over a period of time.  | 1      |
| <b>2</b>  | Fund raising activities within the club, special events, increased membership fees,<br>sponsorship through local companies, grants from local authority, lottery funding,<br>sports governing bodies.   | 1      |
| <b>3</b>  | "A state of physical, mental and social well being" (all components must be listed for the mark).   | 1      |
| <b>4</b>  | External factors - weather, conditions of pitches etc, equipment.<br>Personal factors - amount of training/physical condition, level of skill, quality of<br>opposition/competition, mental preparation.  | 1      |
| <b>5</b>  | A performer may have to: wear/use certain kit/equipment, be restricted to perform in certain<br>events, have training interrupted by demands of a sponsor;<br>a sponsor may interfere in training/performing method, a performer will be under pressure to<br>perform to keep his / her sponsor.  | 1      |
| <b>6</b>  | i) Body needs nutrients for energy, growth, and cell repair.<br>ii) Source of nutrients - protein, fats, vitamins and minerals.   | 2      |
| <b>7</b>  | Advantages - increase interest, knowledge and understanding, increases the amount of money<br>coming into the sport, increase sponsorship opportunities, political advantages - international<br>events, advantages of a personal nature - status, financial.<br>Disadvantages - over exposure can lead to a loss of interest, reduction in the number of people<br>attending the event live, controversy can lead to loss of interest and sponsorship,<br>national/international incidents - Olympics etc, personal intrusion through media. | 1<br>1 |
| <b>8</b>  | Age, time, cost, transport, location, opportunities available locally, type of activity being pursued.  | 2      |
| <b>9</b>  | Verbal: - information given during performance, after performance.<br>Visual: - by watching others perform, watch a video of own performance, watching a<br>demonstration.<br>Knowledge of performance - written reports.<br>Knowledge of results - analysis of others and own result, comparison to national standards.  | 2      |
|           | Mark given for type of feedback and description.  | Max 2  |
| <b>10</b> | Signs - stops sweating, pale grey clammy skin, rapid pulse, can show signs of shock, breathing<br>becomes fast and shallow.<br>Symptoms - cramp, headache, feels weak, feels faint, tired, feels sick.  | Max 2  |
| <b>11</b> | Rules relating to safety around throwing areas, areas for spectators only, entering the area of the<br>track, carrying of throwing equipment, use of jumping and throwing areas without<br>supervision/track judge.   | 2      |
| <b>12</b> | Day before - increase carbohydrate input (pasta etc).<br>Closer to the race - increase fluid intake.<br>Physical - warm up, stretches.<br>Mental preparation - discuss tactics with coach, differing methods of motivation through coach or<br>self induced.  | 3      |

**Section B****B1 Factors Affecting Performance**

- (a) Age, health, ability, quality of instruction, strength or general physical condition. 1
- (b) Open largely perceptual, environment varies, movement varies. 1  
 Closed - largely habitual, movement always the same, environment does not change. 1
- (c) Improve performance, allow longer training sessions, increase muscular growth, speed recovery from injury, calm themselves before events. 1  
 Reduces performance over time, causes depression, reduces blood pressure, can become addictive, infertility, cancer, aggressive behaviour, heart damage, damage caused by being unaware of injury due to masking drugs. 1
- (d) Endomorph - wrestling, weight lifting, sumo wrestling. 1  
 Mesomorph - swimmer, contact sports, rower. 1  
 Ectomorph -high jumper, basketball, volleyball. 1
- (e)(i) Between A-B the level of arousal is low, performance is low, performer boredom, tired, disinterested, little motivation. Towards B this increases. 1  
 B-C: the level of arousal is at its optimum and the performer is at his/her best. 1  
 C-D: the performer is over aroused and as a result performance suffers caused by being anxious, stress. 3
- (ii) Level of arousal could be increased by motivation from coach, warm up before the event, performer having a goal, external factors such as crowds, noise. 2
- f)(i & ii) 1 mark for naming the test  
 max 3 marks for the description  
 1 mark for method of recording.
- (i) **The Harvard Step Test.**
- (ii) Use a step or bench or similar 50cm, and do 30steps per minute for 5 minutes, rest for 1 min and take pulse: use the formula:  $\frac{\text{length of exercise in seconds} \times 100}{5.5 \times \text{pulse count}}$   
 The higher the score, the fitter you are: below 55 - poor, 90+ - excellent
- (i) **The Cooper Test/ 12 minute run**
- (ii) Continuous run/jog/walk for 12 mins around a track, start on a whistle and count the laps: the further you run the fitter you are.
- (l) **The Multistage Fitness Test / Bleep Test**
- (ii) Counts the number of 20m shuttle runs you do between two lines, run must be completed between the bleeps sounding, each minute the bleep speeds up: stop when you cannot keep up and record the number of runs completed.
- (i) **The Cycle Ergometer Test**
- (ii) Uses a cycle ergometer set at 60 revs with a load of 150 watts for a male and 100 for a female, pedal for 5 mins, record the pulse for the last 15 seconds: the lower it is the fitter you are.
- (iii) Training - should use large muscle groups, should work in the aerobic training zone (60% max heart rate), at least 3 times a week, training should feature - a continuous steady pace, working towards increasing duration or level of difficulty, have changes of speed, have a set amount of repetition, which should increase in number or reduce in time. 2

**B2 Health, Safety and Training**

- (a) Warm up  
Stretch muscles  
Wearing of warm clothing in cold conditions. 1
- (b) Specificity, overload, progression, reversibility. 2
- (c) Ensure use of correct equipment, understand rules and requirements, facilities are in good order, ensure correct clothing and footwear, warm down, supervision available - teacher, instructor, life-guard etc. 2
- (d) Signs - swelling, bruising or discolouring, pain to the touch. 1  
Symptoms - constant pain, unable to walk/put pressure without pain. 1  
Treatment - immobilise person - use RICE (no mark to be given without some description) 1
- (e)(i) Athlete A appears fitter - lower resting heart rate, heart rate increases at a slower rate, lower working heart rate, returns to normal levels quicker. 2
- (ii) The heart grows larger, it can hold more blood, contract more strongly, increase in red blood cells, reduction in blood pressure, resting heart rate falls. 3
- (f)(i) Events such as 400m, rowing (non explosive activities). 1
- (ii) Causes pain, fatigue, reduction in efficiency of muscles, can stop muscles working 2
- iii) Produced as a waste product in the muscles, produced during strenuous activity muscles use energy ATP, actively contracting muscles obtain Adenosine Triphosphate from glucose stored in the blood, also from the breakdown of glycogen stored in the muscle, Pyruvic Acid and ATP are generated from the breakdown of glucose, Pyruvic Acid mixes with oxygen and is converted to carbon dioxide, water and ATP; when long periods of exercise occur the circulatory system begins to lose ground in the delivery of oxygen, Pyruvic Acid is then converted into Lactic Acid, LA leaks into the blood stream and is carried around the body, LA is removed by breathing in more oxygen. 3
- (Alternative answer:  
Lactic acid is produced  
as a by-product of anaerobic exercise;  
when muscles are depleted of oxygen during intense exercise;  
from glucose in the blood or glycogen in the muscles after being used as an energy source, or from pyruvic acid;  
only in skeletal muscles during intense periods of exercise.)*
- (iv) Endurance training, long runs, (any examples of an endurance based programme), improve muscles' ability to cope with lactic acid, improving oxygen transportation, improve aerobic capacity, increase efficiency of heart and lungs 1

If a description of Continuous, Aerobic, Interval or Fartlek training is included, 2/7 marks should be awarded.

**B3 Reasons and opportunities for Participating in Physical Activity**

- (a) Increase in funding, opportunities for the development of minor sports, opportunities for playing internationally, development of coaching or grass roots schemes, improvement in facilities and equipment. 1
- (b) Cricket - timing of games (day/night), colour of kit, names on shirts, introduction of video (3rd umpire), restricted over games to fit into TV coverage.  
Football - names on shirts, timings of games to fit TV coverage, use of TV as evidence for disciplinary reasons, new competitions for TV – champions league.  
Olympics - TV companies influencing bids, timing of event to fit US TV schedules. 2
- (c) YMCA, church groups, local sports teams, scouts, youth clubs organisations, national organisations (National Trust) 2
- (d) Population will determine the siting of certain facilities- sports centres; swimming pools require large numbers of participants to be viable.  
Certain sports are based in urban areas e.g. basketball.  
Facilities in urban areas may try to replicate natural facilities – climbing walls, government initiatives often relate to urban areas, issues such as juvenile crime can impact on resources.  
Sports in rural areas tend to use natural elements i.e. sailing, climbing.  
Sports centres in rural areas are usually smaller to reflect population. 3
- (e) Advantages - brings prestige, increases the facilities, improves transport and other communications both internally and internationally, increases the amount of money being brought into the country, increases opportunities for business, raises the profile of sport in the country, increases tourism, if successful produces a feel good factor. 2/3
- Disadvantages - can produce international conflicts, security risks, potential for event to be used by groups to air grievances, possible financial risk, major events can get out of budget, strain of infrastructure - if improved for event is it needed later? Lack of good organisation can cause international embarrassment and result in not being asked to host future events, if event is unsuccessful could harm interest in the sport in that country 3/2
- (f) Lack of opportunity, poor access to buildings, poor changing facilities, lack of specific aids - hoists to access swimming pools - transportation difficulties, reliance on voluntary groups.  
Little advertising or promotion of activities (no media coverage)), few clubs, few coaches, little opportunity for sponsorship even for events such as the para Olympics.  
Public perception of disabled sport, few opportunities to train with able-bodied sport. Organisation of governing bodies often not national.  
Introduction of equal opportunities legislation, Disabilities Discrimination Act. 7



