UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Advanced Subsidiary Level

MARK SCHEME for the October/November 2008 question paper

8666 PHYSICAL EDUCATION

8666/01 Paper 1 (Theory), maximum raw mark 100

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.

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.

CIE is publishing the mark schemes for the October/November 2008 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.

UNIVERSITY of CAMBRIDGE
International Examinations

1 (a) (i) Ball and socket (1)

(accept first two answers only)
Scapula (glenoid fossa) (1)
Humerus (head of) (1) [3]

(ii) Extension/adduction/slight inward/medial rotation (1)

Latissimus dorsi/pectoralis major/teres major
Subscapularis (extends and medially rotates) (1) [2]

(b) (left shoulder forards, right shoulder back)
1. Fibres of internal and external obliques run at 90 degrees to each other
2. The left external obliques contract
3. Rotating spine to the right
4. The right internal obliques contract
5. Rotating spine to the right [4]

(c) (i) Heart rate
The number of times the ventricles beat per minute. (1)
Measured as beats per minute (bpm). (1)

Stroke volume
The amount/volume of blood ejected by the heart/per beat.
at each contraction of the ventricles. (1)
Measured in millilitres (ml). (1)

Cardiac output
The volume of blood ejected by the ventricles/heart in one minute. (1)
Measured in litres per minute (l/min). (1) [6]

(ii) Heart rate increase.
Four of:
1. Anticipatory rise is due to secretion of adrenalin.
2. (Sympathetic nervous system) increasing heart rate.
3. Situated in the cardiac control centre (CCC) in the medulla oblongata.
4. Sympathetic nerves stimulates the SA node (via cardiac accelerator nerve) to increase HR.
5. Proprioceptors in muscles, tendons and joints (inform CCC) that activity has increased.
6. Chemoreceptors (inform CCC) chemical changes in the blood.
7. LA and CO_2 levels have increased.
8. O_2 levels and pH level of blood has decreased.
9. Baroreceptors (inform CCC) that BP has increased.
10. Body temperature increases.
11. Venous return increases therefore increasing HR. [4]

(iii) Three of:
1. Vascular shunt mechanism/Redistribution of blood from vital organs to working muscles.
2. Vasodilation of arteries and arterioles supplying working muscles.
3. Vasoconstriction of arteries and arterioles supplying non – working muscles and non-essential organs.
4. Opening of pre-capillary sphincters supplying working muscles.
5. Closing of pre-capillary sphincters supplying non-essential organs.
6. Controlled by the vasomotor centre. [3]

(d) Three of:
1. External intercostals muscles contract with more force.
2. Pulling the ribs upwards and outwards.
3. Diaphragm flattens as it contracts.
4. Other muscles involved. sternocleidomastoid/pectorals/trapezius/scalenes.
5. Lifting the thoracic cavity even further.
6. Increasing the thoracic volume/increase in lung volume.
7. Pressure in thoracic cavity decreased/decrease in pressure in lungs/increase in pressure gradient.
8. Increase in rate/depth of inspiration. [3]

2 (a) (i) Four of:
1. Supination/palm of hand faces up/forward
2. Pronation/palm of hand faces down/backwards
3. Pivot joint
4. Rotation (round a longitudinal axis) [4]

(ii) Supination – supinator muscle
Pronation – pronator teres [2]

(b) Three of:
1. Fast contraction speed
2. Large size/large number of fibres per motor neurone
3. Large force produced
4. Fatigues quickly
5. Few mitochondria
6. Large glycogen store
7. Contains few capillaries
8. Low myoglobin
9. Works anaerobically [3]

(c) (i) Two of:
Sub max 1 mark
1. A closed sac which surrounds the heart
2. Is fluid filled

Sub max 1 mark
3. Reduces friction
4. Protects the heart [2]

(ii) Three of:
3. Vessels supplying blood called coronary arteries.
4. These branch from the aorta.
5. Vessels taking deoxygenated blood away called coronary veins.
6. Drain into right atrium via coronary sinus. [3]

(d) Six of:
Sub max 2 marks (neural)
7. Proprioceptors (in muscles tendons and joints) inform CCC of increased exercise.
8. Chemoreceptors (in muscles, aorta and carotid artery) inform CCC.
9. That lactic acid levels, CO_2 have increased.
10. That O_2 and pH levels have decreased.
11. Baroreceptors (in blood vessel walls, aorta, and carotid artery) inform CCC.
12. That blood pressure has increased.
13. CCC stimulates SA node to increase HR & SV.
14. Via sympathetic accelerator nerve.

Sub max 2 marks (hormonal)
9. Adrenalin is secreted before (& during) exercise/adrenalin levels rise
10. Adrenalin (stimulates SA node) to increase HR
11. Adrenalin increases strength of ventricular contraction/increases SV

Sub max 2 marks (intrinsic)
12. Body temperature increases, increasing HR
13. Venous return increases, increasing HR & SV/Starlings Law.
14. Increase in stretch of cardiac muscle therefore greater filling/increase in stretch stimulates SA node
15. Preload strengthens the contraction [6]

(e) Five of:
1. Relies on a process called diffusion
2. Movement of gases from areas of high pressure to areas of low pressure
3. Difference in pressure called diffusion gradient
4. Bigger the gradient, greater the diffusion, greater the gaseous exchange/quicker diffusion
5. Diffusion takes place across muscle cell (membrane) and capillary (membrane)
6. O_2 diffuses into muscle cell from blood
7. Because PP of O_2 in blood is higher than PP of O_2 in muscle cell
8. CO_2 diffuses from muscle cell into blood
9. Because PP of CO_2 in muscle cell is higher than PP of CO_2 in capillary
10. O_2 is transferred from haemoglobin in blood to myoglobin in muscle cell
11. Hb has higher affinity for CO_2 than O_2
12. A drop in pH will cause O_2 to dissociate faster and enter cell [5]

3 (a) 1 mark for each:
(efficient) skill appears effortless/well co-ordinated/economy of effort.
(goal directed) skill aims at achieving a set result/result clearly identified.
(aesthetically pleasing) skill is pleasing to the eye/looks good . [3]

(b) Sub max 2 marks for each stage:

Stage 1
1. Explosive strength
2. Speed
3. Co-ordination
4. Orientation

Stage 2
1. Each has sub-routines
2. Running
3. Vertical jump

Stage 3
1. Serial skill/elements of running and jumping put together
2. Adapt and practice FMS into sport specific
3. Try different styles of high jump/learn technique [6]

(c) Three of:
(must use high jump as an example)
1. Explains how we perform very quick actions/ballistic actions
2. Used in mostly closed skills
3. Almost automatic action/not under conscious control/EMP is run
4. No time for feedback
5. If a decision is to be made about each muscle action it would take too long/no adjustment made [3]

(d) (i) Sub max 2 marks:
1. Intrinsic motivation
2. Partakes in an activity for its own sake
3. Partakes for love of the sport/enjoyment/satisfaction

Sub max 2 marks:
1. Extrinsic motivation
2. Perform for material gain
3. Certificates/trophies/praise [4]

(ii)
1. Give extrinsic rewards to begin with
2. Give rewards sparingly
3. Ensure early success/low bar/operant conditioning
4. Give positive reinforcement
5. Make sessions fun/interesting/varied
6. Give positive feedback
7. Ensure performer's physique is suited to the event [3]
8. Set goals to achieve

(e) (i) Sub max 1 mark for:
1. Work place
2. Limited capacity/5–9 pieces of information
3. Holds information for up to 30 secs

Sub max 1 mark for:
1. Limitless capacity
2. Information held for long periods of time/maybe permanently
3. Motor programmes are stored in LTM
4. Information can be taken out and rehearsed [2]

(ii) 1. Information in the STM is rehearsed or practised and so passes to LTM.
2. Stored information is retrieved and compared to new information in STM/or vice versa.
3. New information is then recognised. [2]

(iii) 1. High jumper needs to concentrate on the bar.
2. Irrelevant information is filtered out/ignore the crowd/noise [2]

4 (a) 2 marks for each of:
1 mark for placing:
1 mark for explanation:

Trampolining sequence

I----------X----------I
Discrete Serial Continuous

Trampolining sequence has a number of discrete elements put together in order to form a sequence.

Catching a cricket ball. Nb accept as serial if a running catch is described

IX----------I
Discrete Serial Continuous

Movement which has a clear beginning and end.

Swimming

I----------XI
Discrete Serial Continuous

Movement skill of swimming has no definite beginning or end/ end of one cycle is beginning of next. [6]

(b) 1. Learner connects a stimulus from the environment to a movement response
2. If successful response is connected/associated with stimulus
3. Response is stored in LTM
4. Connections called S/R or learning bonds
5. Connections strengthened through repetition/Thorndike, Law of exercise – more often bond is reinforced stronger it will become
6. Connections strengthened through reinforcement/Thorndike, Law of effect – positive reinforcement increases chances of behaviour recurring
7. Thorndike, Law of readiness – connections can only take place at appropriate stage of maturation
8. Structure the environment to bring about the desired response
9. Behaviour shaping
10. Trial and error often takes place [5]

(c) Two of:
1. Observation is visual guidance through a demonstration.
2. Demonstration can be copied or matched.
3. Much more interesting than verbal explanations.
4. Important during cognitive phase of learning.
5. Visualisation/mental rehearsal.

Four of:
1. Attention: focus on demonstration.
2. Retention: image must be retained or stored.
3. Motor reproduction: learner must have ability to reproduce movement.
4. Motivation: learner must have the drive to learn. [6]

(d) Must apply to example from sport

Four of:
1. The influence of the learning and/or performance one skill on the learning and/or performance of another skill.
2. It usually occurs when skills are similar.
3. Skills are patterns of movement which relate to different activities.
4. Child develops a store of skills which transfer to more difficult skills later.
5. These are fundamental movement patterns.
6. Learner needs to understand similarities.
7. If skills are over-learnt, likelihood of positive transfer.
8. Can be pro-active/retro active.

Egs: overarm throw → tennis serve, smash, javelin [4]

(e) Four of:
1. Is the practice phase.
2. Learner eliminates mistakes/action becomes more fluent/error detection mechanism.
3. Make use of kinaesthetic feedback.
4. Feedback from coach used.
5. Performances become more consistent.
6. Associates performance with mental picture formed in cognitive phase.
7. Some learners stay in this phase/never progress to autonomous phase.
8. Some spare attention to improve more difficult movements.
9. Learner needs positive reinforcement.
10. MP development/storage. [4]

5 ***Please note that lists of key words will not be accepted as an answer.***

(a) **(i)** Four of:
1. Enjoyment
2. Relaxation
3. Freedom of choice
4. Choice of time/space
5. Limited organisation/kit/rules
6. Recuperation
7. Spiritual well-being
8. Social/friendships
9. Taking part/not skill important
10. Health and well being [4]

(ii) Four of:
1. Goal is to win/ beat opponents/competitive
2. Formal rules/officials are needed to deal with infringements
3. High levels of organisation/time designated
4. Requires skill
5. Commitment/serious
6. Extrinsic rewards
7. Professionalism/occupation [4]

(b) Five of:
1. Respect opponents
2. Respect officials/abide by decisions
3. Abide by rules
4. Ban those who transgress/punishment
5. Reward fair play/positive reinforcement
6. Shake hands with opponents
7. Be an example to team
8. Educate/provide role models [5]

(c) **(i)** Four of:
1. Stress relief
2. Health/build a healthy nation/reduce obesity/ healthy heart
3. Fitness.
4. Build self confidence/self esteem/higher morale
5. Improve social skills
6. Learn team work/give and take/leadership
7. Winning and losing
8. Widens the base of pyramid for olympic selection
9. Improve skills
10. Equal opportunity to succeed
11. Social control [4]

(ii) Four of:
1. Where you live
2. Your race or religion
3. Attitudes of family/peers
4. Political attitudes in country
5. Gender attitudes/under representation
6. Ability or disability
7. Socio-economic situation/job/wealth/time/sport seen as elitist
8. Age
9. Don't like sport/prefer to watch
10. Fear of discrimination [4]

(d) Four of:
2 marks sub max for each section.
Positive:
1. Sport provides national identity/Beijing Olympic games
2. Shop window effect
3. (Centrally provided) funding
4. Increases government standing with work force
5. Unity/pride/patriotism

Negative:
1. Used as an instrument of state/political superiority
2. People controlled: e.g. selection
3. Disproportionate funding / few funded at expense of rest
4. Win at all costs ethic/cheating/discard injured talent
5. Authoritarianism
6. Can hide/deflect issues e.g. human rights [4]

6 **(a)** Must use leisure activities as an example.
Four of:
1. Leisure activities are pursued in free time
2. Time left over when life obligations/work/sleep have been fulfilled
3. Each individual has own interests/pursue something they enjoy
4. Individual can choose how to spend leisure time
5. Is for all who have opportunity
6. Relaxation/recreation/stress
7. Self realisation
8. Socialising [4]

(b) Four of:
1. Learning in and about the environment
2. Outdoor pursuits/skills are taught e.g. abseiling, potholing
3. Teach respect/responsibility for the country-side
4. Learn to appreciate the beauty of nature
5. Gives a personal challenge/adventure
6. Learn to work with and depend on others
7. Leadership skills/response to leadership
8. Health/fitness benefits
9. Escape urban environment [4]

(c) Eight of:
All answers will be different: Country of your choice
(Government agencies)
1. National governing bodies
2. Structure of Sport NZ or same
3. Olympic Associations
4. Ministry for sport/individuals/Government departments
5. Sports institutes/technical support
6. Centres of excellence/academies/facilities
7. National sports centres/regional competition
8. Specialist coaching
9. Initiatives from government/campaigns

(Funding)
10. Public funding/ distribution
11. Private funding
12. Voluntary funding
13. Any lottery funds
14. Sponsorships/scholarships
15. Talent identification [8]

(d) **(i)** Five of:
1. Lack of time/childcare/household responsibilities
2. Lack of money/housekeeping has to pay/lower incomes than men
3. Lack of transport
4. Safety of women and girls travelling alone
5. Lack of funding from governing bodies etc
6. Lack of access to facilities/coaches
7. Lack of suitable sports
8. Poor body image/lack of confidence/clothing equipment/self esteem
9. Lack of role models
10. Lack of sponsorship
11. Lack of media coverage
12. Attitude to sport [5]

(ii) Four of:
1. Crèche/childcare/child friendly approach
2. Make activity part of the working day for women e.g. lunchtime activity
3. Work place gyms with low rates
4. Develop walking hiking groups not needing transport
5. Ensure activity in safe locations
6. Offer personal safety and self defence sessions
7. Allocate equal funding to men's and women's activities/sponsorship
8. Have women only sessions/preferred times for ladies
9. Privacy in changing rooms/mirrors/hair dryers
10. Increase media coverage
11. Encourage more female coaches
12. Role of education [4]