

# UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Advanced Subsidiary Level

## MARK SCHEME for the November 2005 question paper

### 8666 PHYSICAL EDUCATION

8666/01

Paper 1

Maximum raw mark 100

This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which Examiners were initially instructed to award marks. It does 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*.

The minimum marks in these components needed for various grades were previously published with these mark schemes, but are now instead included in the *Report on the Examination* for this session.

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

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## Section A Anatomy and Physiology

**1 (a)** Synovial joint. (Description) – a joint which allows a wide range of movement/composed of two or more bones which exist in a joint capsule. [1]

(Example) – shoulder/elbow/hip/knee. [1]

**[TOTAL 2 MARKS]**

**(b)** Movement analysis:

**(i)** Hinge. [1]

**(ii)** Extension. [1]

**(iii)** Rectus femoris/vastus intermedius/vastus lateralis/vastus medialis. [1]

**[TOTAL 3 MARKS]**

**(c) (i)** Fixator.

(Function) – muscle that allows agonist to work or stabilises the bones to allow movement. [1]

(Example) – trapezius during bicep curl – up phase. [1]

**(ii)** Synergist.

(Function) – a muscle that contracts to enhance efficiency of prime mover or prevent unwanted movement. [1]

(Example) – during bicep curl deltoids or synergists prevent unwanted movement of shoulder. [1]

**[TOTAL 4 MARKS]**

**(d)** Vascular Shunt Mechanism. **(6 marks for 6 of)**

1 Changes in blood pressure detected by baroreceptors.

2 Send message to cardiac/vasomotor centre in brain.

3 Stimulation of nerves.

4 (Increase of stimulation causes) vasoconstriction of blood vessels.

5 Reduction in blood flow as a result of vasoconstriction.

6 (Decrease in stimulation causes) vasodilation of blood vessels.

7 Increase in blood flow as a result of vasodilation.

8 Blood diverted to skeletal muscle.

9 Blood taken away from non-essential organs.

**[TOTAL 6 MARKS]**

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(e) Respiratory system.

Labels:

- A Nasal passage/cavity
- B Trachea
- C Bronchus
- D Alveolus
- E Diaphragm

**5 labels correct = 3 marks**  
**4 labels correct = 2 marks**  
**1-3 labels correct = 1 mark**

Functions:

**(1 mark for each)**

- A Filtering of air/remove dust particles/moisten air.
- B Airway into thorax.

**[TOTAL 5 MARKS]**

(f) (i) Blood pressure (measurement): **[1]**

- 1 Heart rate/blood pressure monitor.
- 2 Sphygmomanometer/mmHg.

(ii) Effect of exercise **(4 marks for 4 of)**

- 1 Intense exercise systolic/diastolic pressures rise significantly.
- 2 Steady aerobic exercise – systolic pressure increases.
- 3 Steady aerobic exercise – diastolic pressure constant.
- 4 Cardiac output increases – blood pressure increases.
- 5 Increase resistance in blood vessels.
- 6 Skeletal muscle pump increases blood pressure.
- 7 Respiratory pump increases blood pressure.
- 8 Increased levels of CO<sup>2</sup> and lactic acid causes blood pressure to rise.
- 9 Vasoconstriction increases blood pressure.
- 10 Vasodilation decreases blood pressure.

**[TOTAL 5 MARKS]**

**[QUESTION TOTAL: 25 MARKS]**

2 (a) Movement analysis: **(1 mark for each of)**

- A Ball and socket
- B Humerus, Scapula
- C Knee
- D Hinge
- E Pivot

**[TOTAL 5 MARKS]**

(b) Shot put: **(1 mark for each)**

- (i) Flexion/horizontal flexion
- (ii) Extension
- (iii) Pronation/flexion

**[TOTAL 3 MARKS]**

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(c) (i) Agonist:

(Explanation) – muscle that contracts (shortens) to bring about movement. [1]

(Example) – Bicep brachii during flexion of the elbow or equivalent. [1]

(ii) Antagonist:

(Explanation) – a muscle that relaxes (lengthens) in opposition to the agonist. [1]

(Example) – Tricep brachii during flexion of the elbow or equivalent. [1]

**[TOTAL 4 MARKS]**

(d) Spatial summation: **(3 marks for 3 of)**

- 1 A nervous stimulus will cause motor units to be activated.
- 2 Motor units are activated at different times.
- 3 Allows a sustained contraction.
- 4 All or nothing nature of single twitch.
- 5 Allows for sharing of ATP throughout the muscle.
- 6 Ref asynchronous firing patterns in reducing fatigue
- 7 Ref role in tonus/AOW

**[TOTAL 3 MARKS]**

(e) Neural control of heart rate: **(5 marks for 5 of)**

- 1 Sympathetic Nervous System (SNS) stimulates increase in heart rate.
- 2 Parasympathetic Nervous System (PNS) stimulates decrease in heart rate.
- 3 Systems originate in cardiac centre.
- 4 Cardiac centre found in medulla oblongata.
- 5 SNS causes release of noradrenalin onto the SA node.
- 6 Sympathetic nerve.
- 7 Vagus nerve.
- 8 Role of baroreceptors detecting changes in blood pressure.
- 9 Role of chemoreceptors in detecting changes in composition of blood.

**[TOTAL 5 MARKS]**

(f) Transport of oxygen and carbon dioxide: **(5 marks for 5 of)**

- |                |   |   |
|----------------|---|---|
| Oxygen         | 1 | Transported as oxyhaemoglobin.                          |
|                | 2 | Small amount dissolved in plasma.                       |
| Carbon Dioxide | 3 | Transported dissolved in plasma.                        |
|                | 4 | Transported in plasma as bicarbonate ions.              |
|                | 5 | Combines with water to form carbonic acid.              |
|                | 6 | Transported in RBC as haemoglobinic acid.               |
|                | 7 | Combines with haemoglobin to form carbaninohaemoglobin. |

**[TOTAL 5 MARKS]**

**[QUESTION TOTAL: 25 MARKS]**

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**Section B Acquisition of Skill**

**3 (a) Externally Paced**

(Explanation) – the control of the movement is not determined by the performer but by the environment. **[1]**

(Example) – receiving a pass in hockey or equivalent. **[1]**

**Internally Paced**

(Explanation) – the performer determines when the movement skill starts together with the rate at which it proceeds. **[1]**

(Example) – tennis serve. **[1]**

**[TOTAL 4 MARKS]**

**(b) Association Theory: (4 marks for 4 of)**

- 1 Connecting a stimulus from environment with a movement response.
- 2 If successful stored in long term memory.
- 3 Connections called learning bands.
- 4 Learning bands/SR bond strengthened through reinforcement.
- 5 Learning bands/SR bond strengthened through rehearsal or practice.
- 6 e.g. shuttle hit high towards player, respond by hitting overhead clear.

**[TOTAL 4 MARKS]**

**(c) Feedback:**

**Intrinsic Feedback (sub max of 3)**

- 1 Information from the internal proprioceptors.
- 2 Kinaesthesia involved.
- 3 Used by experienced performers.
- 4 Beginners made aware of it to experience feel.
- 5 e.g. feel of ball when you hit it in tennis.

**Extrinsic Feedback (sub max of 3)**

- 6 Feedback from external sources.
- 7 Received by visual and auditory systems.
- 8 Important for beginners.
- 9 e.g. coach saying well done following successful action.

Candidates must include an example to score maximum marks.

**[TOTAL 5 MARKS]**

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**(d)** Transfer of Learning

Positive Transfer

(Explanation) – one skill enhances the learning and performance of another. [1]

(Example) – throwing a ball → throwing a javelin. [1]

Negative Transfer

(Explanation) – One skill hinders the learning and performance of another. [1]

(Example) – Wrist action - Badminton → Tennis. [1]

**[TOTAL 4 MARKS]**

**(e) (i)** Extrinsic Motivation

(Explanation) – external rewards given to the performer which can influence behaviour. [1]

(Example) – badges, certificates, trophies. [1]

Intrinsic Motivation

(Explanation) – internal satisfaction received by the performer which can influence behaviour. [1]

(Example) – a sense of pride in achieving a personal best. [1]

**[TOTAL 4 MARKS]**

**(ii)** Positive Effects

- 1 Person develops confidence.
- 2 Will repeat the actions.
- 3 Aim higher.
- 4 Develops sense of achievement.

Negative Effects

- 5 False sense of achievement.
- 6 Compete only for the rewards.
- 7 Can reduce intrinsic motivation.

Must have at least one from each section to score maximum marks.

**[TOTAL 4 MARKS]**

**[QUESTION TOTAL: 25 MARKS]**

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**4 (a) (i) Motor Skill**

(Definition) – an action or task that has a goal and that requires movement to achieve the goal. [1]

(Example) – a pass in football. [1]

**[TOTAL 2 MARKS]**

**(ii) Open/Closed Skills (sub max of 3 per section)**

Open Skill

- 1 Affected by the environment.
- 2 Predominantly perceptual.
- 3 Need to adapt movement patterns.
- 4 Externally paced.

Closed Skill

- 5 Not affected by the environment.
- 6 Habitual movement/follow a set movement pattern.
- 7 Stereotypical action.
- 8 Self paced.

**[TOTAL 5 MARKS]**

**(b) Reinforcement:**

Positive Reinforcement

(Explanation) – a stimulus which increases the probability of a desired response occurring. [1]

(Example) – coach saying well done. [1]

Negative Reinforcement

(Explanation) – the stimulus is withdrawn when the desired response occurs. [1]

(Example) – coach who has visibly shown annoyance suddenly stops. [1]

**[TOTAL 4 MARKS]**

**(c) Schema Theory: (1 mark for each)**

- 1 Knowledge of initial conditions.
- 2 Knowledge of response specifications.
- 3 Knowledge of sensory consequences.
- 4 Knowledge of outcome.

**[TOTAL 4 MARKS]**

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**(d) Role of Perception (3 marks for 3 of)**

- 1 Process which interprets and makes sense of information.
- 2 Defection/brain identifies stimulus is present.
- 3 Comparison/stimulus compared to similar stimuli.
- 4 Recognition/stimulus is matched to one stored in the memory.
- 5 Filtering of irrelevant information.
- 6 Selective attention.

**[TOTAL 3 MARKS]**

**(e) Cognitive Phase (3 marks for 3 of)**

- 1 Development of mental picture.
- 2 Requires a demonstration.
- 3 Mental rehearsal.
- 4 Problem solving.
- 5 Shaping of correct responses.
- 6 Trial and error learning.
- 7 Performance contains many errors.

**[TOTAL 3 MARKS]**

**(f) Psychomotor/Gross Motor Abilities:**

Psychomotor

(Explanation) – involves the processing of information, making decisions and putting these decisions into action (actions are usually movements). **[1]**

(Example) – reacting to a starter's gun. **[1]**

Gross Motor

(Explanation) – involves movement and is related to physical fitness. **[1]**

(Example) – endurance/strength. **[1]**

**[TOTAL 4 MARKS]**

**[QUESTION TOTAL: 25 MARKS]**



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**Section C Contemporary Studies in Physical Education and Sport**

**5 (a) Leisure as a form of Social Control. (4 marks for 4 of)**

- 1 Healthy citizens.
- 2 Contented citizens.
- 3 Efficient labour force.
- 4 With high morale.
- 5 Fit to defend the country.
- 6 Develop a national identity.

**[TOTAL 4 MARKS]**

**(b) Play is for everyone.**

**(i) Adults (2 marks for 2 of)**

- 1 Step aside from reality.
- 2 Relieve stress of everyday life/relaxation.
- 3 Enjoyment.

**(ii) Children (2 marks for 2 of)**

- 4 Fun/enjoyment.
- 5 Creativity.
- 6 Master reality.
- 7 Socialisation.

**[TOTAL 4 MARKS]**

**(c) Sportsmanship**

**Definition (sub max 2 marks)**

- 1 Treating your opponent with respect.
- 2 Accepting the referee's decisions.
- 3 Showing good behaviour.
- 4 Refusing to retaliate.

**As a coach (sub max 3 marks)**

- 5 Ban/fine those who do not show good behaviour.
- 6 Show role models of good behaviour.
- 7 Encourage peer pressure/letting the team down.
- 8 Give responsibility to offenders.

**[TOTAL 5 MARKS]**

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**(d) Discrimination**

**Either (i) 50 years + (6 marks for 6 of)**

- 1 Cost.
- 2 Transport.
- 3 Lack of role models.
- 4 Lack of suitable sports.
- 5 Lack of specialist times.
- 6 Perception that sport is for young people.
- 7 Lack of encouragement.
- 8 Medical reasons.
- 9 Young instructors may not understand older people.
- 10 May have been inactive for many years/hard to start.

**Or (ii) Disabled (6 marks for 6 of)**

- 1 Disabled have been perceived as dependent/unable.
- 2 Transport difficulties.
- 3 Access to facilities.
- 4 Suitable facilities.
- 5 Lack of funding.
- 6 Lack of adapted sports and games.
- 7 Lack of specialist coaches.
- 8 Lack of suitable role models.
- 9 Lack of early teaching in skills.
- 10 Lack of competition.

**[TOTAL 6 MARKS]**

**(e) (i) Drugs**

**Why take (3 marks for 3 of)**

- 1 Need to win.
- 2 Pressure from coach/family.
- 3 Fame.
- 4 Fortune/monetary rewards of winning.
- 5 Belief that everyone else is doing it.
- 6 To build muscle/train harder.
- 7 Overcome competition pressures.

**[TOTAL 3 MARKS]**

**Damage the image (3 marks for 3 of)**

- 8 Cheating.
- 9 Against the law of the land.
- 10 Gives a bad example.
- 11 Lowers the status of the sport.
- 12 Young people may copy.

**[TOTAL 3 MARKS]**

**[QUESTION TOTAL: 25 MARKS]**

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**6 (a) Outdoor Recreation (3 marks for 3 of)**

- 1 Appreciate the beauty of nature.
- 2 Outside the everyday existence/get back to nature.
- 3 Spiritual experience/intrinsic pleasure.
- 4 Respect nature/concern for conservation.
- 5 Sense of adventure.
- 6 Feel good factor/form a challenge.

**[TOTAL 3 MARKS]**

**(b) Safety (3 marks for 3 of)**

- 1 Ensure the group is well equipped.
- 2 Prepare the route.
- 3 Look at weather forecast.
- 4 Ensure health & fitness of group.
- 5 Leave details of trip.
- 6 Appoint deputy leader.
- 7 Leader should be qualified.
- 8 Leader should be knowledgeable.

**[TOTAL 3 MARKS]**

**(c) Administration**

Name of agency **[1]**

Function of agency **[3]**

- e.g. :
- 1 Provision of funding for sport.
  - 2 Coaching.
  - 3 Coach education.
  - 4 Competition organisation.
  - 5 Education/courses.
  - 6 Education/schools.
  - 7 Grass roots involvement.
  - 8 Governing Bodies.
  - 9 Facilities.

**[TOTAL 4 MARKS]**

**(d) (i) Violence/factors (4 marks for 4 of)**

- 1 Pressure of needing to win.
- 2 Poor refereeing.
- 3 Nature of the game/physical contact.
- 4 Provocation by the opposition.
- 5 Disappointment owing to poor play/(self/team).
- 6 Having a weapon (stick/bat).
- 7 Big game hype.
- 8 Crowd not segregated/poor crowd control.
- 9 Spills over from society.
- 10 Religion/Alcohol.
- 11 Mass culture effects.

**[TOTAL 4 MARKS]**

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(ii) Violence: solve the problems (4 marks for 4 of)

- 1 Severe penalties/players and spectators.
- 2 Education I guidelines for behaviour.
- 3 Better policing/segregation.
- 4 Ban alcohol.
- 5 Greater numbers in authority.
- 6 Use of technology/videos.
- 7 Promote sport as a family affair.

**[TOTAL 4 MARKS]**

(e) Effects of the media – Must have examples

Positive (sub max 4 marks)

- 1 Bring sport to the masses/armchair spectator.
- 2 National team playing away from home.
- 3 Educate/documentary.
- 4 Entertain/emotion of winning and losing.
- 5 Advertising/sponsorship.
- 6 Money given back to Sport.
- 7 Increase participation.
- 8 Promote lesser sports.

Negative (sub max 4 marks)

- 1 Sport adaptation for the media: (change of times).
- 2 Replays of undesirable/violent parts of games.
- 3 Reduce participation.
- 4 Timing changes/rule changes are not always good.
- 5 More money/coverage of major sports.
- 6 Overload/boredom.

**[TOTAL 7 MARKS]**

**[QUESTION TOTAL 25 MARKS]**