

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
General Certificate of Education  
Advanced Subsidiary Level and Advanced Level

**PHYSICAL EDUCATION**

**8666/01**

Paper 1

October/November 2004

**3 hours**

Additional Materials: Answer Booklet/Paper

**READ THESE INSTRUCTIONS FIRST**

If you have been given an Answer Booklet, follow the instructions on the front cover of the Booklet.  
Write your Centre number, candidate number and name on all the work you hand in.  
Write in dark blue or black pen on both sides of the paper.  
You may use a soft pencil for any diagrams, graphs, or rough working.  
Do not use staples, paper clips, highlighters, glue or correction fluid.

Answer **four** questions, **1 question from each of Sections A, B and C and 1 other from any section.**

At the end of the examination, fasten all your work securely together.  
The number of marks is given in brackets [ ] at the end of each question or part question.

This document consists of **7** printed pages and **1** blank page.





### Section A Applied Anatomy and Physiology

Answer at least **one** question from this section.

- 1 (a) Describe the structure of a fibrous joint and give an example of where this occurs in the body. [2]

- (b) Complete the table below:

| Joint | Joint type      | Articulating bones   |
|-------|-----------------|----------------------|
| Hip   | ball and socket | <b>A</b>             |
| Ankle | <b>B</b>        | tibia, fibula, talus |
| Wrist | <b>C</b>        | <b>D</b>             |

[4]

- (c) An understanding of the effects of exercise on heart rate is important when planning a training programme for a developing athlete.

(i) Sketch a graph to show the effects of exercise and recovery on heart rate. [5]

(ii) Explain the trends occurring during pre-exercise, exercise and post-exercise. [3]

(iii) How is the heart rate of an athlete controlled intrinsically? [2]

- (d) Throughout exercise the volume of air in the lungs will vary. Explain the following terms and give a resting volume for each.

(i) Vital capacity

(ii) Residual volume

(iii) Total lung volume [6]

- (e) The respiratory control centre in the medulla oblongata of the brain controls ventilation.

Explain how neural control of the respiratory muscles enables an athlete's body to cope with the changes required by exercise. [3]

[Total: 25]

2 (a) Using a sporting example, describe the following types of muscle contraction.

(i) Concentric muscle contraction

(ii) Eccentric muscle contraction

[4]

(b) The shoulder joint provides a range of sporting movement.

(i) Identify the agonist muscle involved during the abduction of the shoulder joint.

[1]

(ii) Name the articulating bones of the shoulder joint.

[2]

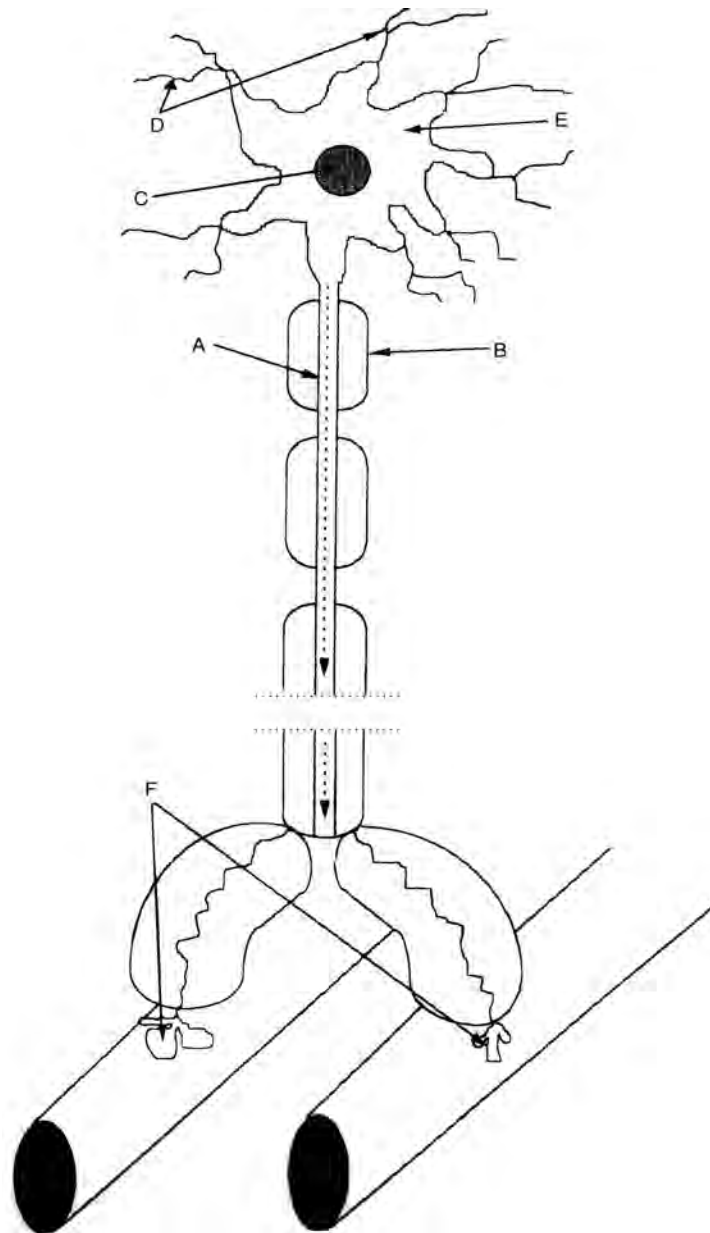
(iii) Name the movements occurring at the shoulder joint during the upward and downward phases of a chin up.

[2]



(c) Movement is controlled by the action of the central nervous system.

(i) Identify and state the functions of **four** of the labelled structures in the diagram of a motor neurone. [4]



(ii) What do you understand by the term **motor unit**? [2]

(iii) Explain the process of wave summation in muscle contraction. [3]

(d) Venous return is the transportation of blood from the capillary beds to the heart, via the venous system.

Describe the five mechanisms that are used to aid venous return. [5]

(e) The vasomotor control centre regulates the flow of blood to the muscles and body organs.

Explain the role of pre-capillary sphincters in this process. [2]

[Total: 25]

**Section B Acquisition of Skill**

Answer at least **one** question from this section.

- 3 (a) Define and give a sporting example of a perceptual skill. [2]

- (b) Operant conditioning is where the learner connects a stimulus from the environment with a movement response.

Describe how a teacher or coach would use this theory to teach a cross-court forehand drive in tennis. [4]

- (c) Feedback is vital in the development and improvement of motor skill.

Using a sporting example, explain the following types of feedback.

(i) Knowledge of results

(ii) Knowledge of performance [4]

- (d) Schmidt's Schema Theory explains how experiences built up in the long term memory can be adapted to new situations.

Describe how you would apply schema theory to the learning of a new skill using **recall** and **recognition schema**. [4]

- (e) Abilities are essential to achieve success in sport.

(i) What do you understand by the term 'ability'? [2]

(ii) State three abilities required by an International rugby player. [3]

- (f) Transfer is the influence that the learning of one skill has on the learning and performance of another.

Using sporting examples, explain the following types of transfer.

(i) Proactive Transfer

(ii) Retroactive Transfer

(iii) Bilateral Transfer [6]

[Total: 25]

- 4 (a) Using a sporting example explain how a motor executive programme of one skill can become a sub-routine of a more complex skill. [4]
- (b) Memory has a key role to play in information processing and helps in the production of well co-ordinated movement.
- (i) What are the characteristics of the short term sensory store? [2]
  - (ii) How many items of information can the short term memory hold? [1]
  - (iii) How can an athlete increase the number of items stored in the short term memory? [1]
  - (iv) How can an athlete improve the retention in, and retrieval of information from the long term memory? [5]
- (c) Open and closed loop control explains how an athlete can adjust a movement during its execution.
- Explain Level II and Level III closed loop control giving sporting examples of each. [6]
- (d) When deciding on how to teach a skill, it is important that the teacher can first of all classify the skill.
- (i) Using a continuum, classify the following skills as either discrete, serial, or continuous.
    - A – Serve in tennis
    - B – Pass in rugby
    - C – Triple jump[3]
  - (ii) Justify the placement of these skills on the continuum. [3]

[Total: 25]

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

Answer at least **one** question from this section.

- 5 (a) Using relevant examples, explain how Physical Education can prepare an individual for active leisure. [5]
- (b) Prince Philip has been quoted as saying “Outdoor experiences are an aid to navigation through life”. (Advanced PE for OCR: S. van Wely et al.)
- (i) What social values are developed through Outdoor Education? [4]
- (ii) Using a practical example of an outdoor adventure activity explain the difference between subjective and objective danger. [4]
- (c) How is Sport made **available to all** in a country of your choice? [4]
- (d) Using a country of your choice, describe how Sport is administered at **national level**. [8]
- [Total: 25]

- 6 (a) Play is something that both children and adults do.
- How do children and adults benefit from play? [3]
- (b) Fair play in sport is seen to rub off onto crowds watching the games.
- How would a coach or teacher promote fair play in teams or an individual? [4]
- (c) What are the characteristics of Physical Recreation? [4]
- (d) “Sponsorship is an intrinsic aspect of Sports Funding” (Sport and PE: Wesson et al.)
- State the advantages **and** disadvantages of sponsorship on the performer. [6]
- (e) “Spectator sport and the media have fused together. The one is inconceivable without the other”. (Sport Britain 1945–2000, Holte & Mason)
- Using sporting examples, discuss the influence of the media on the development of sport. [8]
- [Total: 25]

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