General Certificate of Education
January 2006
Advanced Level Examination

ASSESSMENT and QUALIFICATIONS ALLIANCE

SPORT AND PHYSICAL EDUCATION **PED4**
Unit 4

Tuesday 31 January 2006 9.00 am to 10.30 am

For this paper you must have:
- a 12-page answer book.

Time allowed: 1 hour 30 minutes

Instructions
- Use blue or black ink or ball-point pen. Pencil should only be used for drawing.
- Write the information required on the front of your answer book. The *Examining Body* for this paper is AQA. The *Paper Reference* is PED4.
- Answer **four** from **five** questions.
- Do all rough work in the answer book. Cross through any work you do not want marked.

Information
- The maximum mark for this paper is 64.
- 4 of these marks will be awarded for the Quality of Written Communication.
- The marks for questions are shown in brackets.

Advice
- You will be assessed on your ability to use an appropriate form and style of writing, to organise relevant information clearly and coherently, and to use specialist vocabulary, where appropriate.
- The degree of legibility of your handwriting and the level of accuracy of your spelling, punctuation and grammar will also be taken into account.

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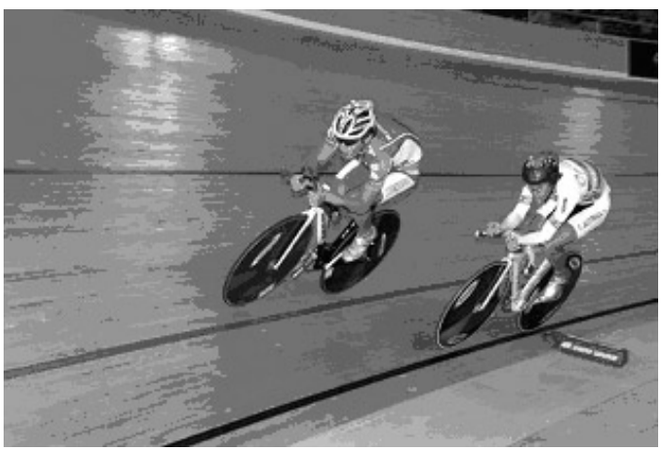
Physiological, Biomechanical and Psychological Factors which Optimise Performance

Answer **four** from **five** questions.

1 **Total for this question: 15 marks**

Figure 1 shows a sprint cycle race. This activity involves cycling four laps of a 250 metre track, with the final lap being completed as fast as possible. Elite performers cover the final lap in times of between 10 and 11 seconds.

Figure 1



Source: *www.cyclingnews.com*

(a) Name the **main** energy system being used in the final sprint to the finishing line **and** explain how this system provides energy for the working muscles. *(4 marks)*

(b) At the end of the race, the cyclist will be out of breath and will continue to breathe heavily even though they have come to a complete rest. Explain why this breathlessness occurs. *(4 marks)*

Before important competitions, cyclists tend to become anxious.

(c) Name and explain the different forms of *anxiety* that a performer may experience. *(4 marks)*

(d) Various tests have been designed for measuring anxiety in sport. Name **one** of these tests, state how it is administered **and** what aspect of anxiety it measures. *(3 marks)*

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2 **Total for this question: 15 marks**

Games players will use a variety of movements during their matches. The movements will involve muscular contractions of different muscle fibre types.

(a) (i) Identify **five** structural **and/or** physiological differences between fast and slow-twitch muscle fibres. *(5 marks)*

(ii) Suggest **three** possible physiological causes of muscle fatigue. *(3 marks)*

After a competitive match, players may explain their success or failure using a variety of factors called *attributions*. Weiner (1972) classified these attributions into four groups, and split the groups into two dimensions.

(b) (i) What are the **two** *dimensions of attributions*? *(2 marks)*

(ii) What are the **four** *groups of attributions*? *(2 marks)*

In terms of the attributions that games players make about their results, some attributions may be damaging to the players' future performances through the development of learned helplessness.

(c) What do you understand by the term *learned helplessness* and what strategies may a coach use to prevent this from happening? *(3 marks)*

3 **Total for this question: 15 marks**

Elite performers are required to be well prepared both psychologically and physiologically. Psychological preparation is best served if the performer has high self-efficacy.

(a) Explain what you understand by the term *self-efficacy*. *(2 marks)*

(b) What strategies could a coach employ to improve the *self-efficacy* of a performer? *(6 marks)*

Elite performers may attend altitude training sessions in order to improve their performance.

(c) (i) What are the supposed benefits of *altitude training*? *(4 marks)*

(ii) Why is altitude training not always as effective as it should be? *(3 marks)*

Turn over for the next question

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4 **Total for this question: 15 marks**

Elite performers often train by themselves, but may on occasions train as part of a group.

(a) How would you distinguish a *group* from a collection of individuals? *(4 marks)*

(b) Name **and** explain the stages that lead to group formation. *(4 marks)*

The training that elite performers undertake may include *plyometrics* and/or *proprioceptive neuromuscular facilitation* (*PNF*) stretching.

(c) Explain the role of the *muscle spindle apparatus* in

(i) plyometrics, *(4 marks)*

(ii) PNF stretching. *(3 marks)*

5 **Total for this question: 15 marks**

Ice-skating competitions involve skating programmes that last approximately five minutes, and may involve spinning movements that conform to mechanical principles.

Figure 2 shows an ice skater performing part of her routine.

Figure 2

Source: *www.trymysport.co.uk*

(a) During a five-minute skating programme, what will be the **three** main energy sources used? *(3 marks)*

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(b) Using **Figure 2**, explain the mechanical principles that allow spinning ice-skaters to adjust their rate of spin. *(6 marks)*

An ice-skating squad may be regarded as a group and will often have a leader.

(c) Describe how, according to Chelladurai's multidimensional model (1980), effective leadership leads to good performance outcomes and member satisfaction. *(3 marks)*

The way in which the members of a group inter-relate is called *cohesion*.

(d) Discuss whether cohesive groups are always more successful. *(3 marks)*

END OF QUESTIONS

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Question 5 Source: www.trymysport.co.uk

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