

General Certificate of Education  
June 2005  
Advanced Level Examination



**SPORT AND PHYSICAL EDUCATION**  
**Unit 4**

**PED4**

Friday 17 June 2005 Afternoon Session

**In addition to this paper you will require:**  
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.
- Mark allocations are shown in brackets.
- 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.
- Up to 4 marks will be awarded for the quality of your written communication.

**Physiological, Biomechanical and Psychological Factors which Optimise Performance.**

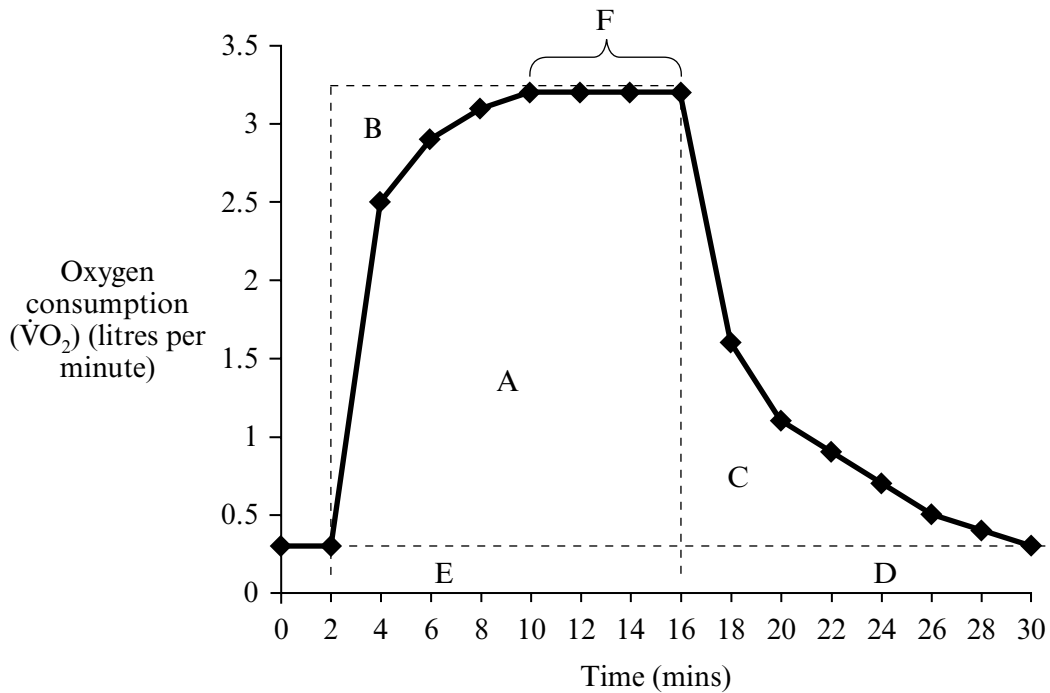
Answer **four** from **five** questions.

1

Total for this question: **15 marks**

Elite performers need to control their psychological and physiological performance.

- (a) (i) What are the similarities and differences between *aggressive* behaviour and *assertive* behaviour in sport? (3 marks)
- (ii) Discuss the *social learning* theory of aggression. (5 marks)
- (b) **Figure 1** shows the *oxygen consumption* ( $\dot{V}O_2$ ) of a subject during a period of rest, sub-maximal exercise and recovery.



**Figure 1**

- (i) State which letter (A–F) represents *oxygen deficit* **and** which letter (A–F) represents *EPOC*. (2 marks)
- (ii) How long did the exercise last **and** what does letter F represent? (2 marks)
- (c) *EPOC* consists of fast and slow components. What are the functions of the *slow component* **and** how are these functions achieved? (3 marks)

2

**Total for this question: 15 marks**

Personality profiling and biomechanical analysis can be used to prepare performers who compete at the highest level.

Morgan's Profile of Mood State (POMS) is a questionnaire given to performers to establish their relative measures on the six mental health states of fatigue, vigour, tension, depression, anger and confusion.

- (a) Research has shown that the profile for POMS differs between elite and non-elite performers. Describe these differences. (3 marks)
- (b) What are the advantages **and** disadvantages of using questionnaires to provide psychological information? (4 marks)
- (c)
  - (i) When accelerating along the track at the beginning of a 100-metre race, a sprinter generates a large impulse. What do you understand by the term "impulse"? (2 marks)
  - (ii) Sketch **and** label a graph to show the typical impulse generated by the sprinter at this stage of the race. (6 marks)

3

**Total for this question: 15 marks**

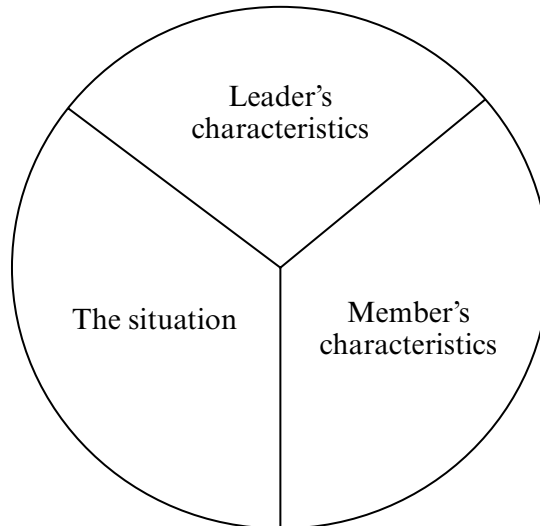
Weightlifting is a sport where the performer generates maximal strength contractions while being watched by an audience.

- (a)
  - (i) Explain what you understand by a *motor unit* **and** how they may be used to produce muscle contractions of varying strength. (5 marks)
  - (ii) Describe how energy is provided for the repeated maximal contractions that occur during training for weightlifting. (3 marks)
- (b) Some weightlifters appear to perform well in front of an audience, while others seem to perform badly, "*choking*" under the pressure. Use *social facilitation* theory to explain this observation. (7 marks)

**Turn over ►**

Team game players often look to their leader to assist their performance.

- (a) (i) Distinguish between *emergent* and *prescribed* leaders. (2 marks)
- (ii) **Figure 2** shows three factors affecting leadership.

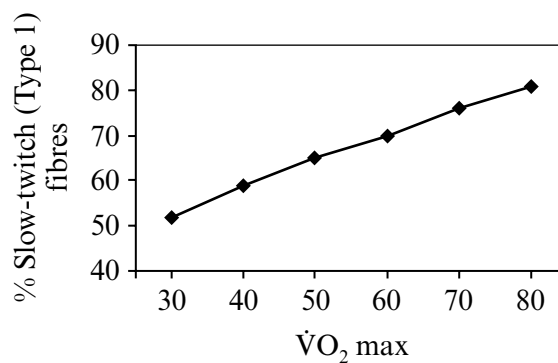


**Figure 2**

Using **Figure 2**, discuss the idea that leaders need to be adaptable in their approach.

(6 marks)

- (b) **Figure 3** shows the relationship between the  $\dot{V}O_2$  max of male athletes and their percentage distribution of slow-twitch (type 1) muscle fibres.



**Figure 3**

- (i) What do you understand by the term  $\dot{V}O_2$  max? (2 marks)
- (ii) Describe and explain the relationship between  $\dot{V}O_2$  max of the male athletes and their percentage distribution of slow-twitch (Type 1) muscle fibres. (5 marks)

5

Total for this question: 15 marks

Athletes competing in the high jump will often fail to clear the bar in the early stages of a competition for different reasons, even though they later go on to clear greater heights.

**Figure 4** shows a high jumper at take off.

Figure 4 is not reproduced here due to third-party copyright constraints.

**Figure 4**

- (a) Use *Newton's Three Laws of Motion* to explain how the high jumper takes off from the ground. (6 marks)
- (b) **Figure 5** shows the types of attribution that are common in sport.

		Locus of causality	
		Internal	External
Stability	Stable	Ability	Task Difficulty
	Unstable	Effort	Luck

**Figure 5**

- (i) Using **Figure 5**, describe the different types of *attribution* that may be used by athletes. (4 marks)
- (ii) In terms of attribution theory, explain what is meant by *self-serving bias*. (2 marks)
- (iii) People who fail in sport may at some time experience *learned helplessness*. Explain what this means. (3 marks)

**END OF QUESTIONS**

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