

General Certificate of Education  
January 2005  
Advanced Level Examination



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

**PED4**

Monday 31 January 2005 Morning 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.

**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.
- Up to 4 marks will be awarded for the quality of your written communication.

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

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

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

Elite performers will usually work with their coaches to produce a long-term structured training programme to improve their performance.

- (a) In this context, what do you understand by the term *periodisation*? (3 marks)
- (b) Describe **five** structural **and/or** physiological differences that you would expect to find between an elite athlete and a non-athlete, resulting from the effects of this training programme. (5 marks)

Elite performers often use *goal setting* as part of their training programme.

- (c) What value does *goal setting* have for the performer? (2 marks)
- (d) Outline the factors that make *goal setting* effective. (5 marks)

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

Team game players tend to play and train as a group in order to improve their performances.

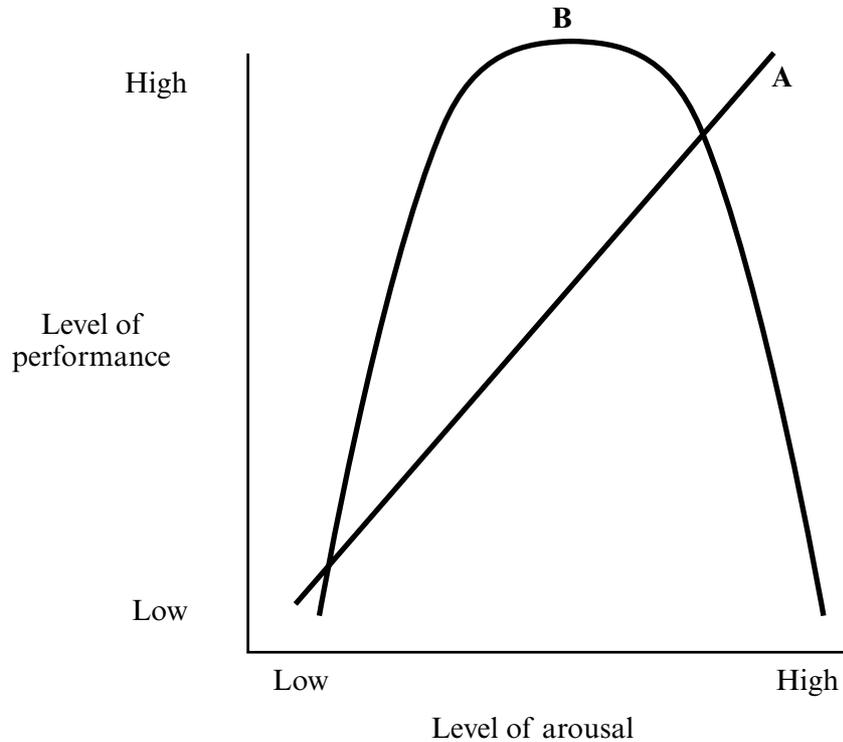
- (a)
  - (i) What do you understand by the term *group cohesion*? (3 marks)
  - (ii) Explain how the size **and** structure of a group may affect its cohesiveness. (3 marks)
  - (iii) Discuss whether cohesive groups are always more successful. (3 marks)
- (b) Training programmes will often include exercises to improve flexibility.
  - (i) Describe the **method** involved in *Proprioceptive Neuromuscular Facilitation (PNF)* stretching. (4 marks)
  - (ii) Using your knowledge of *muscle spindle apparatus*, explain why *PNF* stretching tends to produce better results in terms of increased flexibility than other forms of stretching. (2 marks)

3

Total for this question: 15 marks

When competing on their own, elite performers such as ice skaters are affected by many factors.

- (a) An elite performer's motivation may be affected by their level of arousal. **Figure 1** shows two graphs (**A** and **B**) that may be used to explain how arousal varies during performance.



**Figure 1**

- (i) Identify the theories represented by graphs **A** and **B** in **Figure 1**. (2 marks)
- (ii) Describe how **each** theory may be used to explain the effects of arousal on performance. (7 marks)
- (b) Explain how a spinning ice-skater is able to alter their speed of rotation by changing their body shape. (6 marks)

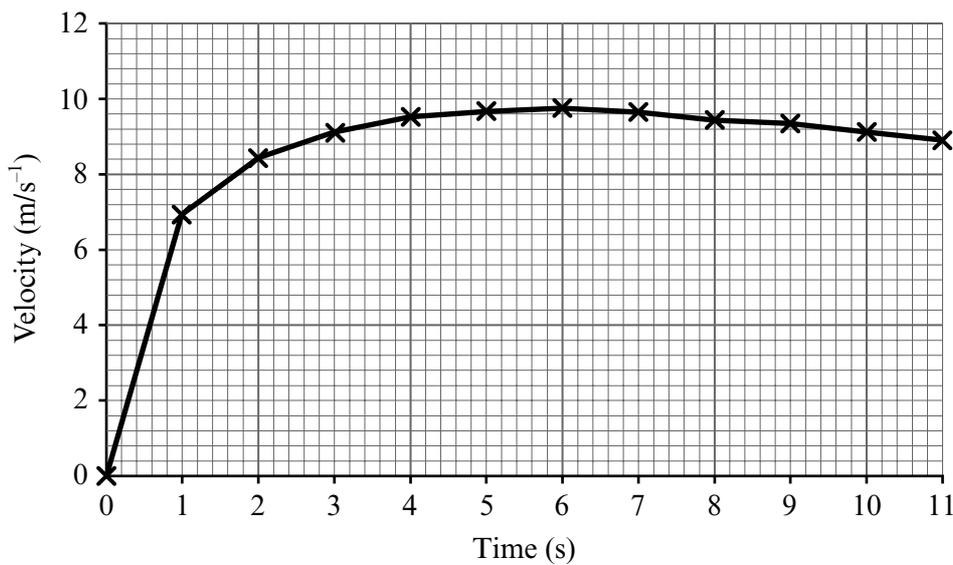
**TURN OVER FOR THE NEXT QUESTION**

Turn over ►

The outcome of a sprint race may be determined by a performer's personality and ability to overcome and generate forces to provide acceleration and maintain velocity.

- (a) The performance and behaviour of sports performers may be affected by their personalities. Discuss this statement, using suitable examples, with reference to both *trait* **and** *interactionist* theories of personality. (7 marks)

- (b) **Figure 2** shows a velocity/time graph for an elite 100-metre sprinter.



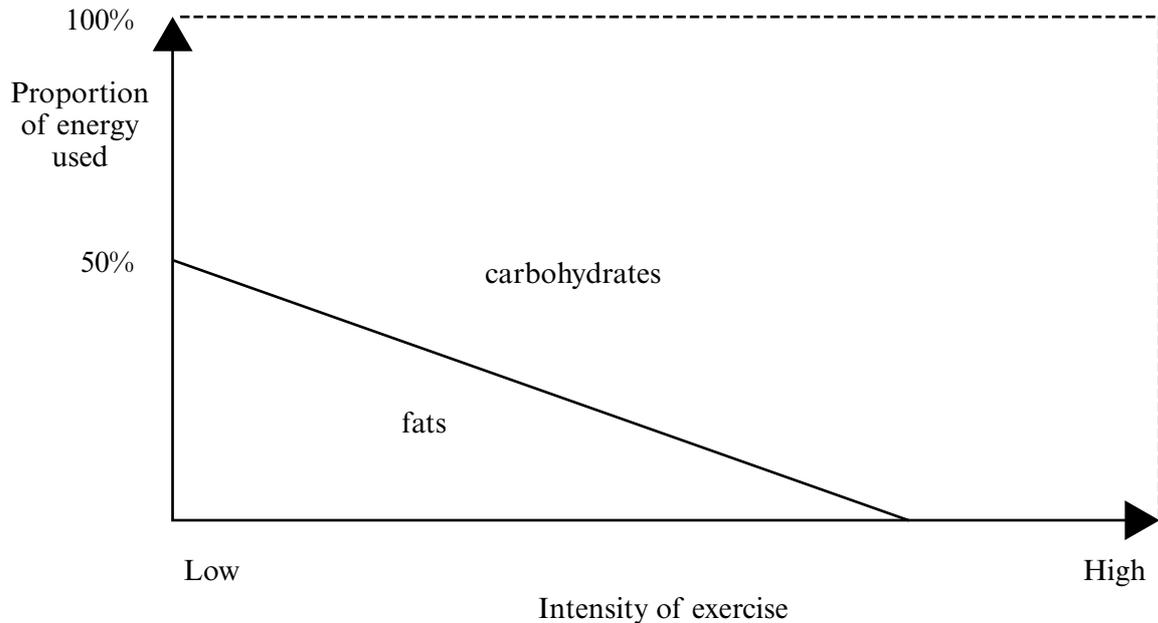
**Figure 2**

- (i) Use **Figure 2** to determine the *velocity* of the sprinter after 3 seconds, **and** identify the period of time when the sprinter's *acceleration* was the greatest. (2 marks)
- (ii) What is happening to the sprinter between 6 and 11 seconds? Explain why this occurs. (3 marks)
- (c) Identify the forces **A–E** in **Figure 3** that act on the sprinter during a race. (3 marks)

Figure 3 is not reproduced here due to copyright restraints.  
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Team game players need to manage both their physiological and psychological demands during performance.

**Figure 4** shows the average proportions of carbohydrate and fat used during a period of exercise of increasing intensity.



**Figure 4**

- (a) What does **Figure 4** show **and** explain, using your knowledge of *energy systems*, why this occurs. (6 marks)
- (b) Players in contact sports often display both *aggressive* and *assertive* behaviour.
- (i) Distinguish between *aggressive* and *assertive* behaviour. (3 marks)
- (ii) Using your knowledge of appropriate theories, discuss the idea that playing contact sports **may** increase **or** reduce *aggressive* behaviour within the game situation. (6 marks)

**END OF QUESTIONS**