

General Certificate of Education
January 2004
Advanced Level Examination



SPORT AND PHYSICAL EDUCATION
Unit 4

PED4

Thursday 29 January 2004 Morning Session

In addition to this paper you will require:

a 12-page answer book.

Time allowed: 1 hour 30 minutes

Instructions

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

Information

- Σ The maximum mark for this paper is 64.
- Σ Mark allocations are shown in brackets.

Advice

- Σ 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.
- Σ The degree of legibility of your handwriting and the level of accuracy of your spelling, punctuation and grammar will also be taken into account.
- Σ Up to 4 marks will be awarded for the quality of your written communication.

Physiological and Psychological Factors which Optimise Performance

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

1

Total for this question: 15 marks

Elite games players require high levels of fitness and psychological preparation, therefore regular fitness testing and after-match performance analysis are common.

- (a) **Figure 1** illustrates the relationship between the concentration of blood lactate and the workload.

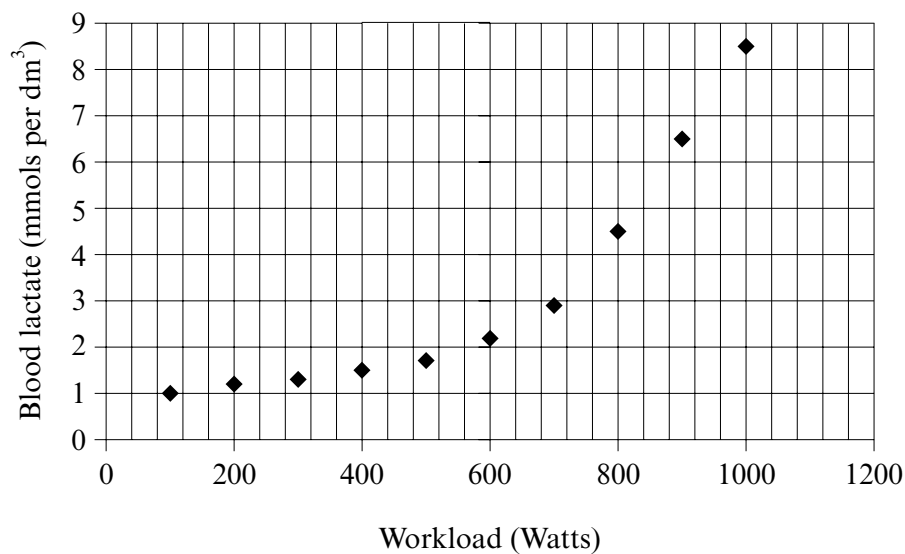


Figure 1

Use **Figure 1** to identify the workload level at which *lactate threshold* occurs, and explain why lactate (lactic acid) tends to be produced when a player is exercising. (3 marks)

- (b) Explain how lactate is removed from the blood by the body. (4 marks)
- (c) **Figure 2** shows Weiner's (1986) two-dimensional model of *attributions*.

| | | Locus of Causality | |
|-----------|----------|--------------------|----------|
| | | INTERNAL | EXTERNAL |
| Stability | STABLE | Ability | B |
| | UNSTABLE | C | D |

Figure 2

In terms of sporting performance, briefly explain what is meant by *attribution*. (2 marks)

- (d) Using examples from sport, give an explanation of the different attributions labelled **B**, **C** and **D**. (3 marks)
- (e) Attributions may contribute to *learned helplessness*. How may a coach use attribution theory to overcome a state of *learned helplessness* in a performer? (3 marks)

2

Total for this question: 15 marks

Success in sport is often linked to effective leadership. Fiedler (1967) suggested that the effectiveness of a leader depended upon the extent to which the leader's style fitted the situation the team were in.

- (a) Name the **two** styles of leader that Fiedler identified and describe the different situations where each style is most effective. (5 marks)
- (b) Chelladurai suggested additional factors, other than the leader's characteristics and different situations, which must be taken into account when assessing the effectiveness of leadership. Identify and explain **one** of these factors. (2 marks)
- (c) Successful track and field performance is dependent upon an effective energy supply. **Figure 3** shows how the supply of each energy system varies according to the duration of a task.

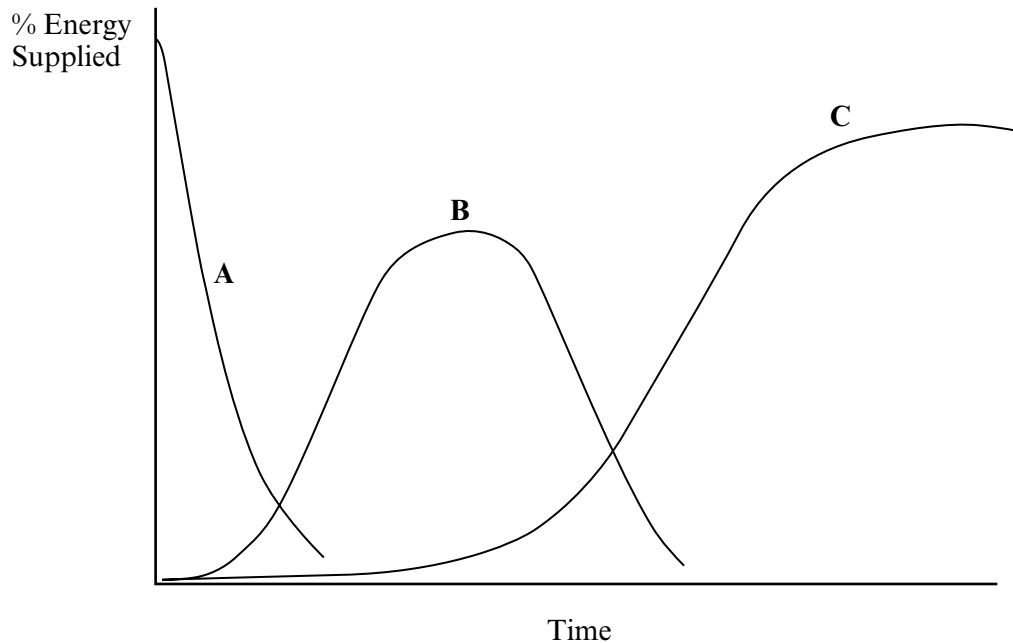


Figure 3

- Identify each of the energy systems **A**, **B** and **C**. (2 marks)
- (d) Explain how the differing energy sources of these systems are used during:
- (i) a **series** of javelin throws; (2 marks)
- (ii) a long-distance run of **increasing intensity**. (4 marks)

TURN OVER FOR THE NEXT QUESTION

Turn over ►

3

Total for this question: 15 marks

Coaches use biomechanical and psychological analysis to help optimise performance.

- (a) **Figure 4** is incomplete. When complete, it should show three curves representing the following parameters during a backward tucked somersault:

angular momentum;
moment of inertia;
angular velocity.

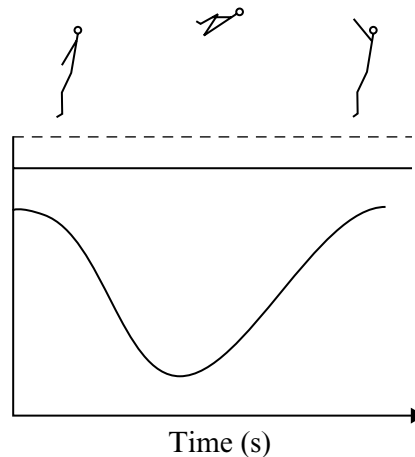


Figure 4

- (i) Copy **Figure 4**; complete it by adding in the missing curve and labelling all **three** curves. (4 marks)
- (ii) Explain the shape of each of the three curves you have drawn, giving reasons for your answers. (4 marks)
- (b) The performance of certain tasks may cause a change in anxiety. Research has looked at the differing effects on sports performance of *cognitive state anxiety* and *somatic state anxiety*, as shown in **Figure 5**.

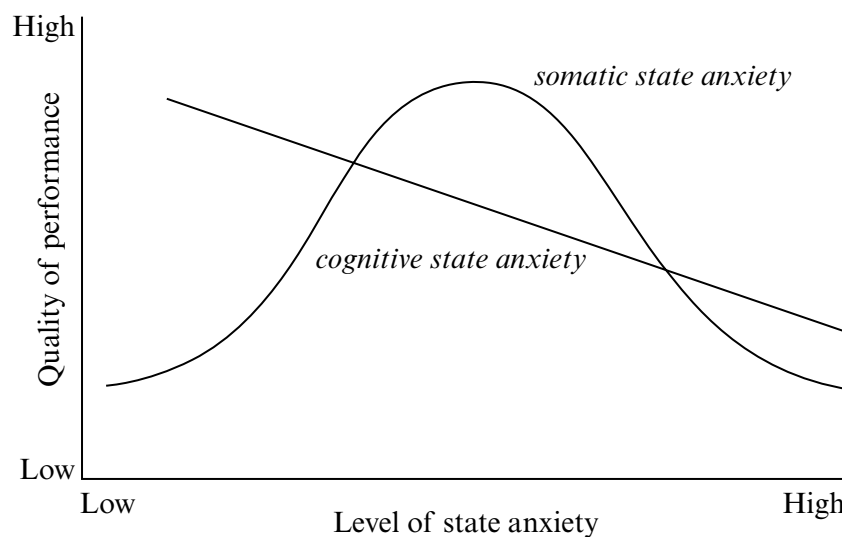


Figure 5

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- (i) Using examples, describe what you understand by the terms *cognitive state anxiety* and *somatic state anxiety*. (2 marks)
 - (ii) Use **Figure 5** to explain the differing effects of cognitive state anxiety and somatic state anxiety on performance. (2 marks)
 - (iii) Explain the difference between *state anxiety* and *trait anxiety*. (3 marks)

4

Total for this question: 15 marks

Marathon runners carefully plan their training to deal with the demands which they may encounter during a race.

- (a) Some runners may use *glycogen loading* as part of their preparation. What do you understand by this term and why would they need to do this? (4 marks)
- (b) Effective temperature regulation is vital to the marathon runner. How is body temperature regulated, and under what conditions does this process become more difficult? (3 marks)
- (c)
 - (i) Marathon runners often prefer to train in small groups. Explain what is meant by the term *group cohesion*. (2 marks)
 - (ii) Explain **three** factors that are associated with group cohesion. (3 marks)
 - (iii) Discuss whether cohesive groups are always more successful. (3 marks)

TURN OVER FOR THE NEXT QUESTION

Turn over ►

5

Total for this question: 15 marks

Team and individual performances are affected by group processes and the laws of motion.

(a) A team's performance may be expressed as:

Actual productivity = potential productivity – losses due to faulty group processes

- (i) What factors may affect *potential productivity*? (2 marks)
 - (ii) Explain how *losses due to faulty group processes* may affect a team's performance. (4 marks)
 - (iii) How could coaches reduce the effects of losses due to faulty processes? (3 marks)
- (b) The following force–time graphs were obtained during the various stages of a runner's 100-metre sprint.

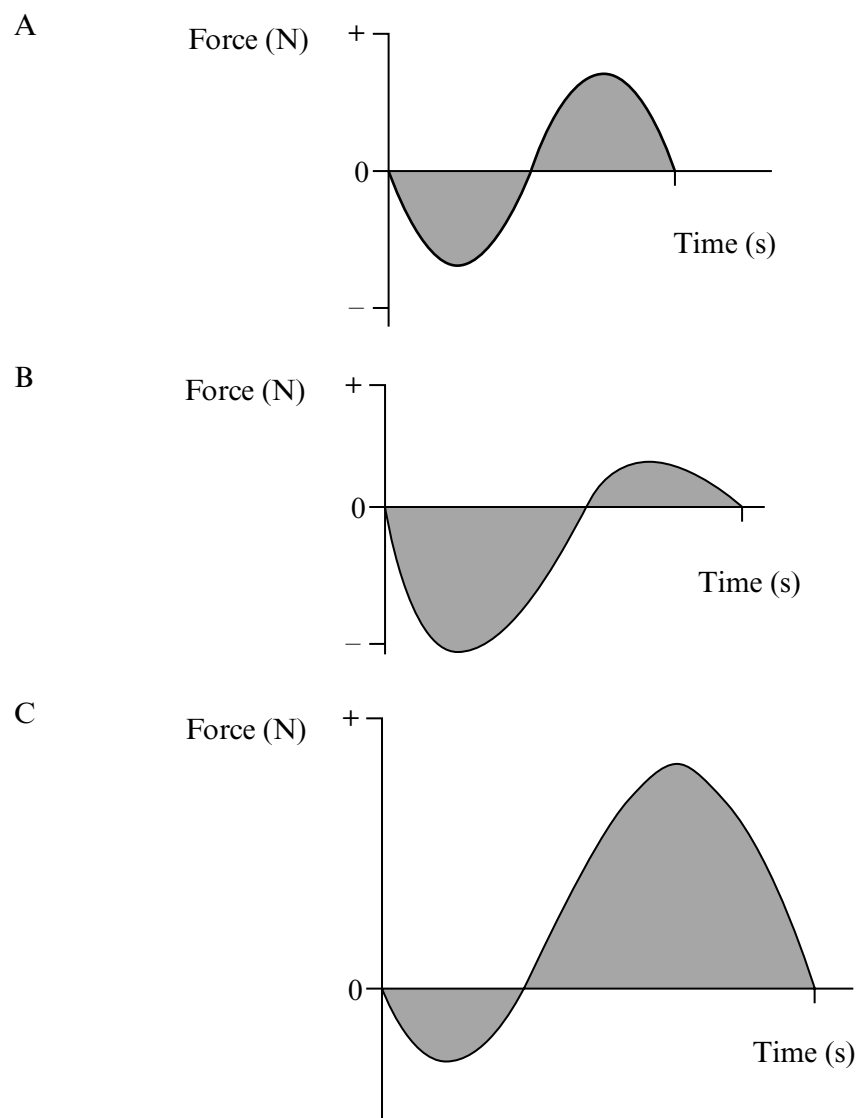


Figure 6

Using **Figure 6**, identify which graph is associated with each of the following phases of a 100-metre sprint, giving reasons for your answers:

- (i) **early** in the sprint;
- (ii) during the **middle** part of the sprint; and
- (iii) towards the **end** of the sprint. *(6 marks)*

END OF QUESTIONS