General Certificate of Education
January 2009
Advanced Level Examination

SPORT AND PHYSICAL EDUCATION **PED4**
Unit 4

Thursday 29 January 2009 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 black ink or black 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 to be marked.

Information
- The maximum mark for this paper is 64.
- The marks for part questions are shown in brackets.
- Four of these marks will be awarded for Quality of your Written Communication.
- You are reminded of the need for good English and clear presentation in your answers. All questions should be answered in continuous prose. Quality of Written Communication will be assessed in all answers.

Physiological, Biomechanical and Psychological Factors which Optimise Performance

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

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

Elite golfers use their clubs to overcome the forces acting on the golf ball so that it travels long distances.

(a) Describe how the impact of the golf club, gravity and air resistance affect the *velocity* **and** *acceleration* of a golf ball. *(4 marks)*

(b) The flight of a golf ball is said to be parabolic. Explain the term *parabolic* **and** the main factors that limit the distance that a golf ball will travel in flight. *(4 marks)*

(c) Golfers have to remain calm when putting but may suffer from *anxiety*. Explain the different forms of anxiety that may affect performers in similar demanding situations. *(4 marks)*

(d) Using **drive theory**, explain why performers such as golfers might hit some bad shots due to their levels of *arousal*. *(3 marks)*

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

Games players have to work alongside their team mates and try to maintain their levels of exertion right up to the end of the game.

(a) Name **and** explain the stages that groups tend to go through before they become established as a successful team. *(4 marks)*

(b) (i) According to Steiner, a team's actual productivity depends upon their potential productivity less their faulty processes. What are the **two** main *faulty processes* that can limit a team's productivity? *(2 marks)*

(ii) Distinguish between *social loafing* and the *Ringlemann effect*. *(2 marks)*

(c) In order to perform to their best, games players should keep below their lactate threshold. What do you understand by the term *lactate threshold* **and** why should games players keep below it? *(2 marks)*

(d) In terms of recovery, explain the relationship between lactate threshold and the functions of *Excess Post-exercise Oxygen Consumption (EPOC)*. *(5 marks)*

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

Elite marathon runners dedicate years of their life to prepare physiologically and psychologically for their event.

(a) Describe the *structural* **and/or** *physiological* differences between elite marathon runners and non-elite joggers. *(5 marks)*

(b) Altitude training is used by some marathon runners as part of their physiological preparation. Discuss whether *altitude training* is always beneficial to marathon runners. *(5 marks)*

(c) How might *goal setting* enhance the performance of a marathon runner? *(5 marks)*

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

Competing in the 100-metres at the World Athletic Championships or the Olympic Games provides the performer with both psychological and physiological challenges to overcome.

(a) Winning a World Championship requires high self-efficacy.

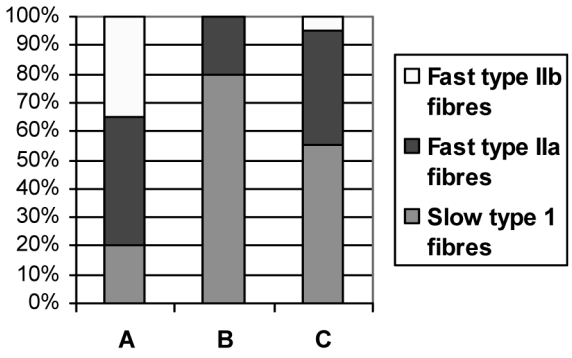
(i) What do you understand by the term *self-efficacy*? *(2 marks)*

(ii) How can a coach help a performer to increase their self-efficacy? *(4 marks)*

(b) Competing in a World Championship final will often cause *stress* which could be detrimental to the athlete's performance. Many elite performers will therefore use various stress management techniques. What are the general principles that make such techniques effective? *(3 marks)*

(c) **Figure 1** shows the proportions of different *muscle fibre types* for elite sprinters, elite middle distance runners and elite marathon runners.

Figure 1



(i) Using **Figure 1**, which of the profiles, **A**, **B** or **C**, shows the proportions of muscle fibre types for elite sprinters? Justify your answer. *(2 marks)*

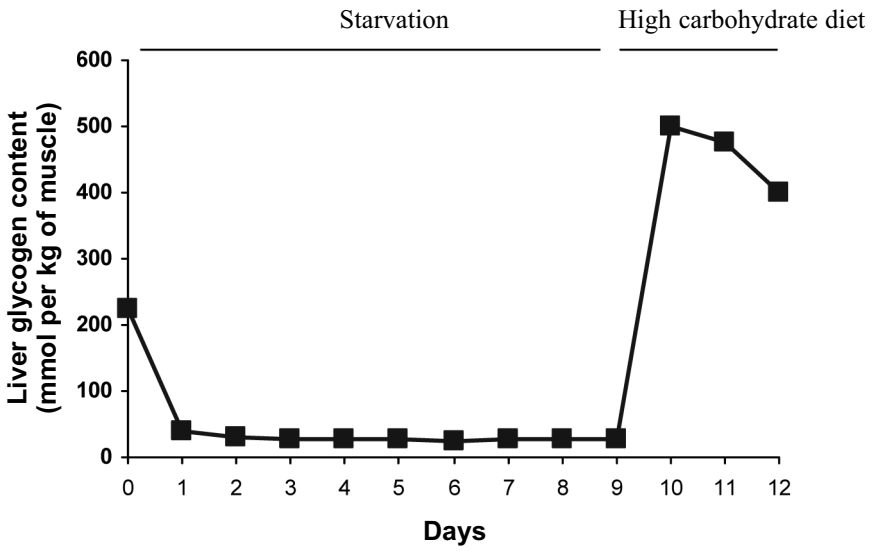
(ii) Describe the characteristics of the main muscle fibre type used by elite sprinters. *(4 marks)*

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

Individuals involved in long-distance swimming, such as swimming the English Channel, may spend several hours completing their event.

(a) **Figure 2** shows the effect of diet on liver glycogen replenishment.

Figure 2



Using **Figure 2**, explain how dietary modification could be used to improve the performance of a long-distance swimmer. *(4 marks)*

(b) What are the advantages for a long-distance swimmer of following a high fat diet? *(4 marks)*

(c) Explain how the *interactionist* theories of personality enable us to predict the behaviour of performers. *(3 marks)*

(d) *Achievement motivation* is an aspect of personality. Which type of achievement motivation is most likely to occur in elite performers? Justify your answer. *(4 marks)*

END OF QUESTIONS