

General Certificate of Education  
June 2007  
Advanced Subsidiary Examination



**SPORT AND PHYSICAL EDUCATION**  
**Unit 1**

**PED1**

Thursday 24 May 2007 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 PED1.
- 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 75.
- The marks for questions are shown in brackets.
- You will get up to 3 extra marks for using good English, organising information clearly and using specialist vocabulary where appropriate. You will also get marks for good handwriting, spelling, punctuation and grammar.

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**Physiological and Psychological Factors which Improve Performance**

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

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**1****Total for this question: 18 marks**

To be effective in athletic competition, performers need an understanding of the skills and the fitness components required.

- (a) Explain the difference between *skill* and *ability* **and** identify the characteristics of a skilled performer. (4 marks)
- (b) Name a different athletic event for each of the following skill classifications, giving a reason for your choice;
- (i) an open skill; (2 marks)
  - (ii) a continuous skill; (2 marks)
  - (iii) a serial skill. (2 marks)

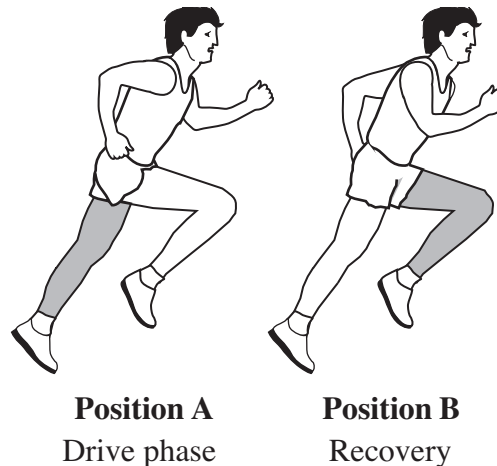
Power is a major fitness component of many athletic events.

- (c) What do you understand by the term *power*? (2 marks)
- (d) (i) Describe a suitable test for measuring power **and** name the type of event (sprinting, throwing, jumping), for which the test would be valid. (3 marks)
- (ii) Name **two other** fitness components apart from power that you consider to be important for a named athletic event, giving a reason for **each** of the components you suggest. (3 marks)

Running is an example of an activity that requires an efficient respiratory system and high levels of motivation.

**Figure 1** shows the drive phase and recovery phase of the leg action while running.

**Figure 1**



- (a) Using **Figure 1**, identify the *main agonist*, the *joint action* **and** the *type of contraction* at the knee when moving from **Position A** to **Position B**. (3 marks)

Exercising for an extended time can leave the runner breathless.

- (b) Which **three** lung volumes provide air to the body during exercise? (3 marks)
- (c) Regular training may cause changes to the structure and the efficiency of the lungs that will help to improve performance.

Describe the changes that may occur in terms of lung capacity **and** gaseous exchange. (3 marks)

In order to maintain their training programme, runners need a high level of motivation.

- (d) What do you understand by the term *motivation*? Using examples, explain the different **types** of motivation. (5 marks)
- (e) Using examples, explain how a coach could motivate a group of runners who need to train regularly. (4 marks)

**Turn over for the next question**

3

Total for this question: 18 marks

During a game, the performer's body systems will adapt as the demands made on it change.

**Table 1** shows changes in the way blood is distributed around the body during exercise, compared with rest.

Table 1

Organ	At Rest	% of total blood flow	Maximum Effort	% of total blood flow
Skeletal muscles	1000	20	26 000	88
Heart	250	5	1 200	4
Skin	500	10	750	2.5
Kidneys	1000	20	300	1
Liver/gut	1250	25	375	1.25
Brain	750	15	750	2.5
Other	250	5	625	0.75
Whole body	5000	100	30 000	100

- (a) (i) Using **Table 1**, give reasons for the changes in blood flow to the skin and the heart during maximum effort compared with rest. (4 marks)
- (ii) Explain how this redistribution of blood is achieved. (3 marks)
- (iii) Describe the mechanisms that assist the return of blood to the heart. (3 marks)

Games players control movement through open loop and closed loop control systems.

- (b) (i) What are the characteristics of an *open loop control system*? Give an appropriate example of its use in sport. (4 marks)
- (ii) Describe how a *closed loop control system* differs from an *open loop control system*. (4 marks)

Learning may be affected by the teaching style applied and the body's ability to meet the demands of the session.

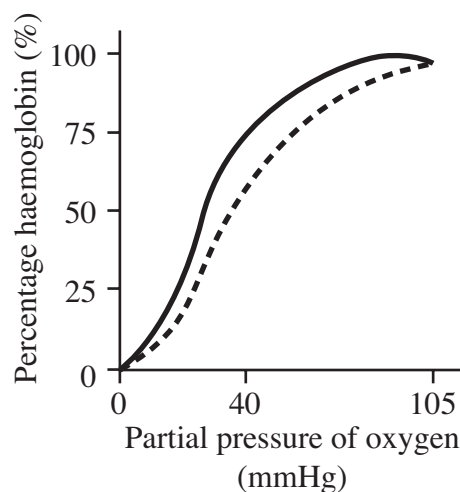
- (a) Identify **four** factors that a coach should consider before selecting an appropriate *teaching style*. (4 marks)
- (b) What do you understand by the *command style* of teaching? Discuss the advantages **and** disadvantages of using this style of teaching when taking a group of beginners for swimming. (5 marks)

During a demanding practice session, carbon dioxide is produced by the body.

- (c) (i) State **two** ways in which *carbon dioxide* is transported by blood. (2 marks)

**Figure 2** shows the oxyhaemoglobin disassociation curve.

**Figure 2**



- (ii) During exercise the curve shifts to the right. Explain the causes of this change and the effect that this has on oxygen delivery to the muscles. (4 marks)
- (iii) Explain how the increasing levels of carbon dioxide in the blood cause the heart rate to increase. (3 marks)

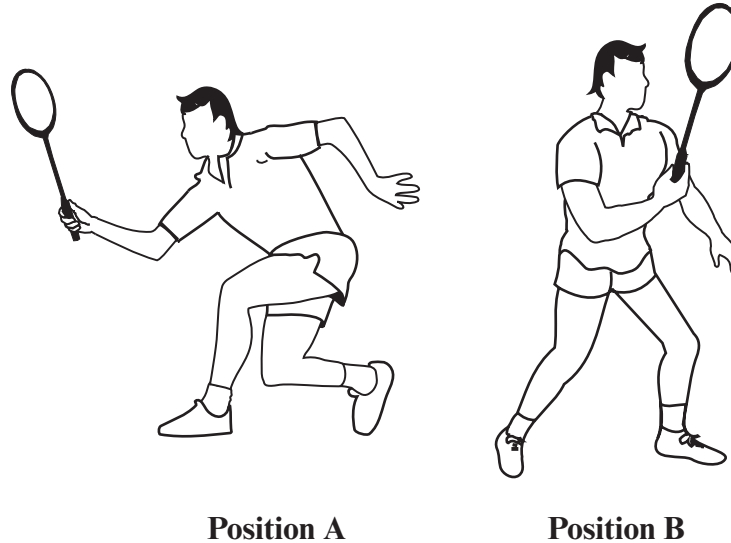
5

Total for this question: 18 marks

Racket players require skills that they have previously learned in order to perform movements.

Figure 3 shows a squash player executing a forehand stroke.

Figure 3



- (a) Using Figure 3, copy and complete Table 2 in your answer book and identify the *type of joint*, the *joint action* and the *main agonist* at the shoulder **and** elbow that are involved in the movement of the racket arm from Position A to Position B.

Table 2

	Type of joint	Joint action	Main agonist
Shoulder			
Elbow			

(6 marks)

Squash is an activity that requires a high level of local muscular endurance.

- (b) Explain the term *local muscular endurance* and describe a suitable test to measure it. (3 marks)

In order to be successful, squash players need to use previously learned skills and adapt them to new situations.

- (c) When analysing movements, what do you understand by the terms *motor programme* and *sub-routines*? (2 marks)

Question 5 continues on the next page

- (d) *Schmidt's schema theory* is based on four sources of information which are used to modify motor programmes.

List the **four** sources of information. (4 marks)

- (e) How should a coach organise practices to enable schema to develop? (3 marks)

**END OF QUESTIONS**

**There are no questions printed on this page**

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Question 3: Adapted from CLEGG, *Exercise Physiology*, Feltham Press, 1995

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