SPORT AND PHYSICAL EDUCATION
Unit 1

Friday 16 January 2009 1.30 pm to 3.00 pm

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 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 part questions are shown in brackets.
• Three of these marks will be awarded for using good English, organising information clearly and using specialist vocabulary where appropriate.
Physiological and Psychological Factors which Improve Performance

Answer four from five questions.

1. Weightlifters need to ensure that they prepare physically and psychologically in order to perform in a competitive situation.

Figure 1 shows a weightlifter who has moved into the squat position prior to attempting his lift.

(a) (i) Identify the joint action, main agonist and type of muscle contraction taking place at the knee joint as the weightlifter moves downwards from a standing position into the squat position. (3 marks)

(ii) In what plane and about which axis is the movement into the squat position taking place? (2 marks)

(b) Identify the structural and/or functional changes to the heart that may occur as a result of a long-term training programme. (4 marks)

(c) In order to train hard, weightlifters need a high level of motivation, and coaches will use different strategies to motivate, depending upon the stage of learning.

(i) What do you understand by the term motivation? Using examples, explain the different types of motivation. (5 marks)

(ii) How could a coach motivate a group of novice performers? (4 marks)
Games players will need to develop and use a wide range of movements and skills in order to perform effectively in a game situation. They will also need to ensure that they develop the required components of fitness.

(a) (i) Schmidt’s schema theory suggests that we build up schema (set of rules) which allow us to vary our actions by modifying our motor programmes, depending on the situation.

List the four sources of information that are required to modify motor programmes. (4 marks)

(ii) How can a coach enable schema to develop? (4 marks)

(b) (i) Many people participate in games to maintain their health and to improve their fitness. What do you understand by the terms health and fitness? (2 marks)

(ii) Sub-maximal fitness tests such as the Harvard Step Test can be used by coaches to measure their performers’ cardio-respiratory endurance (stamina).

How could a coach ensure that the results from sub-maximal fitness tests are valid and reliable? (5 marks)

(c) Cardio-respiratory endurance (stamina) is a component of fitness. Using examples from games, name three other components of fitness and explain their importance within the game. (3 marks)

Turn over for the next question
In order to improve performance, a coach must be able to analyse movement and to provide effective feedback.

**Figure 2** shows a javelin thrower just prior to delivering his throw.

(a) (i) **Figure 3** represents the lever system operating at the elbow when the javelin throw is executed.

Name the lever system and identify the parts labelled A, B and C in **Figure 3**.

(4 marks)
(ii) **Figure 4** is a diagram of an athlete performing a javelin throw.

![Figure 4](image)

Using **Figure 4**, copy and complete **Table 1** in your answer book, identifying the **joint action**, **main agonist** and **type of contraction** at the shoulder and elbow as the arm moves from **Position A** to **Position B**.

<table>
<thead>
<tr>
<th>Joint action</th>
<th>Main agonist</th>
<th>Type of contraction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shoulder</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elbow</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(5 marks)

(b) The javelin thrower will experience different types of feedback both during and after a performance.

(i) *Intrinsic feedback* and *knowledge of performance* are two types of feedback. Explain these types of feedback. (2 marks)

(ii) Identify the main benefits of feedback. (3 marks)

(iii) What factors should the coach consider to ensure that feedback is effective for a javelin thrower? (4 marks)
Squash is a demanding activity that is affected by important physiological and learning processes.

(a) *Gaseous exchange* occurs whilst a squash player is at rest and during exercise.

(i) Explain how gaseous exchange occurs in the lungs. (3 marks)

(ii) What features of the alveoli assist gaseous exchange? (3 marks)

*Table 2* shows the proportion of oxygen and carbon dioxide in inhaled and exhaled air at rest and during exercise.

### Table 2

<table>
<thead>
<tr>
<th></th>
<th>% Inhaled air</th>
<th>% Exhaled air at rest</th>
<th>% Exhaled air during exercise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage oxygen</td>
<td>20.00</td>
<td>16.00</td>
<td>14.00</td>
</tr>
<tr>
<td>Percentage carbon dioxide</td>
<td>0.04</td>
<td>4.00</td>
<td>6.00</td>
</tr>
</tbody>
</table>

(iii) Using the information in *Table 2*, state and explain the effects of exercise on gaseous exchange in the lungs. (3 marks)

(b) A squash player will need to perform a range of skills in order to be effective in a game situation. To do this, they will use motor programmes and open and closed loop systems.

(i) What do you understand by the term *motor programme*? Explain how they are formed. (5 marks)

(ii) Identify and explain the two areas of stored information in *Adam’s Closed Loop theory*. (4 marks)
Whilst participating a sports performer will experience changes in lung volumes and ventilation rates depending upon the duration and the intensity of exercise.

(a) Explain the terms *tidal volume*, *minute ventilation* and *respiratory frequency*. (3 marks)

*Figure 5* shows the ventilation rates of a performer working at a set intensity.

![Figure 5](image)

(b) Describe how the shape of the graph in *Figure 5* would change for a performer:

(i) working at a higher intensity than that shown in *Figure 5*, give reasons for your answer; (3 marks)

(ii) working at the same intensity as that shown in *Figure 5* but after a period of several months’ endurance training, give reasons for your answer. (3 marks)

(c) When learning a new skill, a performer may experience different types of transfer of learning.

(i) Explain the terms *transfer of learning*, *proactive transfer* and *retroactive transfer*. (3 marks)

(ii) Explain, using examples, when the following types of transfer are most likely to occur:

- positive transfer
- negative transfer
- zero transfer. (6 marks)

END OF QUESTIONS
There are no questions printed on this page