

General Certificate of Education
June 2006
Advanced Subsidiary Examination



SPORT AND PHYSICAL EDUCATION
Unit 1

PED1

Thursday 25 May 2006 9.00 am to 10.30 am

For this paper you must have:

- 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 marked.

Information

- The maximum mark for this paper is 75.
- 3 of these marks will be awarded for the Quality of Written Communication.
- The marks for part questions are shown in brackets.
- 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 and Psychological Factors which Improve Performance

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

1

Total for this question: 18 marks

To produce a successful triple jump, an athlete has to use his muscles and joints effectively and demonstrate a high skill level.

Figure 1 shows a triple jumper in the take-off phase of his jump.



Position A

Figure 1

- (a) Name the *joint action* that has occurred at the **hip**, labelled position **A** in **Figure 1**, **and** identify the main *agonist* that has caused this action. (2 marks)
- (b) (i) Name and sketch the lever system operating at the **knee** during take-off, clearly labelling the *effort arm* **and** the *resistance arm*. (4 marks)
- (ii) What are the advantages **and** disadvantages of this class of lever system? (3 marks)
- (c) Successful triple jumpers will use their abilities to improve their level of skill. Briefly explain the terms *ability* and *skill*. (2 marks)
- (d) What are the **characteristics** of a *skilled* performance? (3 marks)
- (e) The skill of triple jumping can be classified according to various skill continua.

Classify the long jump according to the following **four** continua **and** justify each of your choices.

- open to closed
- self-paced or externally paced
- discrete to continuous
- gross to fine

(4 marks)

2

Total for this question: 18 marks

During a practice session, a tennis player's circulatory system will respond to the extra physical demands being placed on the body by increasing blood flow to active muscles.

Figure 2 shows a player serving in tennis.



Figure 2

- (a) The service action can be taught using either the *whole* or the *part* method of learning.
- (i) State **three** advantages of using the *part method* of learning to teach a tennis serve. (3 marks)
 - (ii) State **three** disadvantages of using the *part method* of learning to teach a tennis serve. (3 marks)
 - (iii) Having decided on which method of learning to use, what factors should a coach consider when deciding whether to use *massed* or *distributed* practice? (3 marks)
- (b) (i) Arteries, capillaries and veins form part of the circulatory system. Explain the main features of **one** of these blood vessels in relation to its function. (3 marks)
- (ii) During a practice session, blood flow is redirected to the active muscles. Explain **how** this is achieved. (3 marks)

Question 2 continues on the next page

- (iii) **Table 1** shows the redistribution of blood around the body during exercise, compared with rest.

Organ	At rest	Percentage (%) of blood flow	Maximum effort	Percentage (%) of blood flow
Brain	750	15	750	0.75
Skin	500	10	750	2.5
Coronary vessels	250	5	1200	4
Kidney	1000	20	300	1
Liver/Gut	1250	25	375	1.25
Skeletal muscle	1000	20	26 000	88
Other	250	5	625	0.75
Whole body	5000	100	30 000	100

Table 1

Using **Table 1**, explain why tennis players should not eat at least one hour prior to a practice session. (3 marks)

3

Total for this question: 18 marks

Games players will take part in regular training and practice to improve their cardiac function and performance.

- (a) During practice, cardiac output will vary.
- (i) Briefly explain the terms *cardiac output* and *stroke volume* **and** the relationship between them. (3 marks)
- (ii) Explain how training affects cardiac output and its components. (3 marks)
- (b) In order to increase cardiac output during exercise, there needs to be an increase in the return of blood to the heart.

Describe the mechanisms that assist the return of blood to the heart. (3 marks)

- (c) (i) *Schmidt's Schema Theory* is based on performers using **four** sources of information to modify their motor programmes. List these **four** sources of information. (4 marks)
- (ii) Explain how a coach can enable schema to develop. (5 marks)

4

Total for this question: 18 marks

To achieve a successful javelin throw, the athlete must learn to co-ordinate the action of the muscles and joints to increase the distance of the throw.

Figure 3 shows an athlete throwing a javelin.



Figure 3

- (a) Copy **Table 2** into your answer book and then complete it. Using **Figure 3**, identify the *type of joint*, the *joint action* and the main *agonist* involved at the elbow **and** the shoulder to achieve the position shown in **Figure 3**. (6 marks)

Throwing Phase	Type of joint	Joint action	Main agonist
Elbow			
Shoulder			

Table 2

- (b) A javelin thrower may undertake a training programme designed to improve his performance.

Identify **and** define **two** main components of fitness that are required by a javelin thrower. (3 marks)

- (c) As the javelin thrower's skill improves, he will pass through the three stages of learning.

Name the **three stages of learning** **and** describe the characteristics of the level of performance associated with each stage. (3 marks)

Question 4 continues on the next page

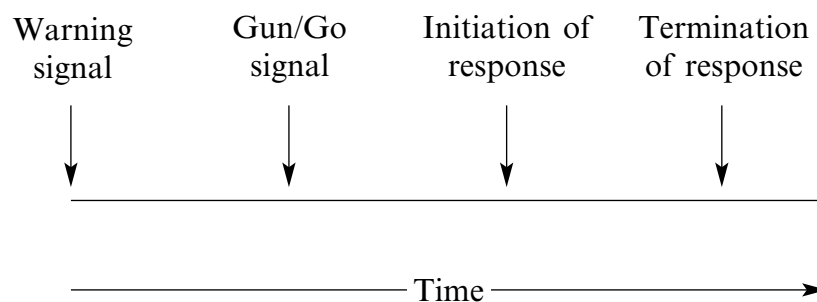
- (d) What strategies could a coach use to help the thrower progress from:
- (i) the first stage of learning; (3 marks)
 - (ii) to the final stage of learning? (3 marks)

5

Total for this question: 18 marks

In sprint races, athletes need to have a quick start and an efficient running action.

Figure 4 shows the various stages that occur before, during and at the end of the sprint start.

**Figure 4**

- (a) In your answer book, redraw **Figure 4** and clearly label your drawing to identify *reaction time*, *movement time* and *response time*. (3 marks)
- (b) (i) What factors can affect the sprinter's anticipation of the starter's gun in the race? (3 marks)
- (ii) What can a sprinter do to improve his response time? (3 marks)

Figure 5 shows the start of a 100 metre sprint race.

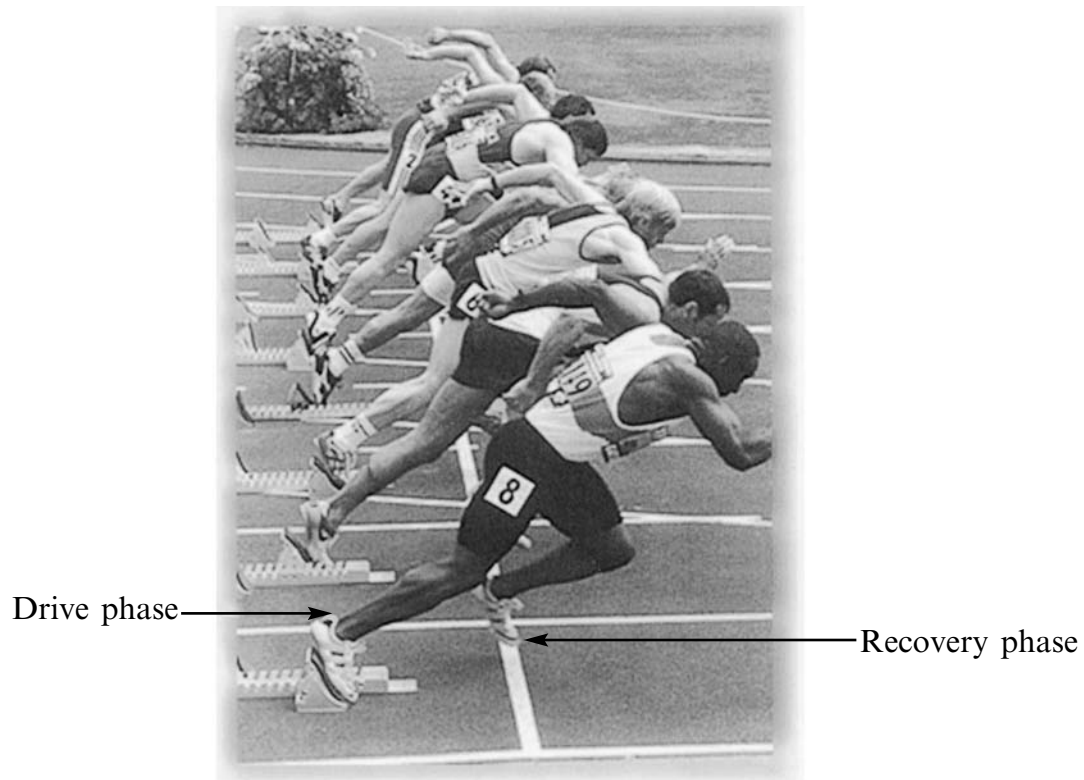


Figure 5

- (c) (i) Copy **Table 3** into your answer book and then complete it. Using **Figure 5**, identify the *type of contraction*, the *joint action* and the main *agonist* that are involved at the ankle during the drive phase **and** the recovery phase. (4 marks)

	Drive phase	Recovery phase
Type of contraction		
Joint action		
Main agonist		

Table 3

- (ii) Through which plane and about what axis do the drive phase and the recovery phase take place? (2 marks)
- (iii) Name, sketch and label the lever system acting at the ball of the foot, as shown in **Figure 5** during the drive action. (3 marks)

END OF QUESTIONS

There are no questions printed on this page

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