

Write your name here

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Other names

**Pearson Edexcel**  
**Level 1/Level 2**  
**GCSE (9–1)**

Centre Number

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Candidate Number

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# Physical Education

## Component 1: Fitness and Body Systems

Wednesday 16 May 2018 – Morning  
**Time: 1 hour 45 minutes**

Paper Reference

**1PE0/01**

**You do not need any other materials.**

Total Marks

### Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided  
– *there may be more space than you need.*

### Information

- The total mark for this paper is 90.
- The marks for **each** question are shown in brackets  
– *use this as a guide as to how much time to spend on each question.*

### Advice

- Read each question carefully before you start to answer it.
- Check your answers if you have time at the end.

Turn over ►

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Answer ALL questions.

Write your answers in the spaces provided.

Some questions must be answered with a cross in a box ☒. If you change your mind about an answer, put a line through the box ☒ and then mark your new answer with a cross ☒.

1 (a) Which **one** of the following bone classifications is **most** suitable for weight bearing activities? (1)

- A Long bone
- B Flat bone
- C Short bone
- D Irregular bone

(b) Which **one** of the following is a region of the vertebral column? (1)

- A Clavicle
- B Pelvis
- C Cervical
- D Sternum

(c) Which **one** of the following is the correct classification of the knee joint? (1)

- A Pivot
- B Ball and socket
- C Condylloid
- D Hinge

(d) Which **one** of the following correctly states the role of ligaments? (1)

- A Join bone to bone
- B Join muscle to bone
- C Join tendons to muscles
- D Join muscle to muscle

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(e) Which **one** of the following blood vessels takes oxygenated blood away from the heart to the body? (1)

- A Pulmonary vein
- B Pulmonary artery
- C Aorta
- D Vena cava

(f) Identify where gas exchange takes place. (1)

- A Bronchi
- B Alveoli
- C Bronchioles
- D Diaphragm

(g) Which **one** of the following performance-enhancing drugs (PEDs) is an athlete **most** likely to take to increase their power or strength? (1)

- A Beta blockers
- B Anabolic steroids
- C Diuretics
- D Narcotic analgesics

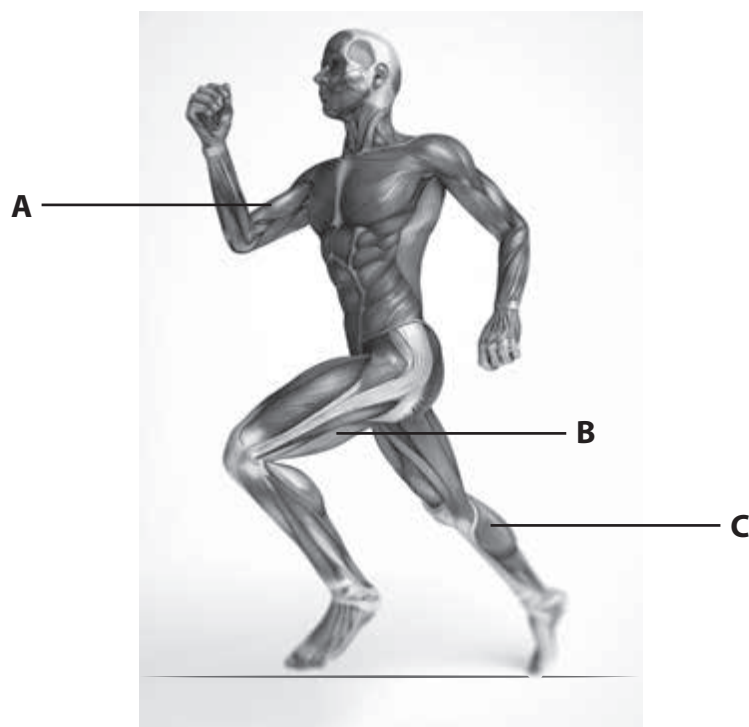
(h) Which **one** of the following PEDs is an athlete **most** likely to take to increase oxygen delivery to their muscles? (1)

- A Stimulants
- B Erythropoietin (EPO)
- C Growth hormones (GH)
- D Beta blockers

(Total for Question 1 = 8 marks)



2 **Figure 1** shows the muscular system while running.



(Source: © Sebastian Kaulitzki/Shutterstock)

**Figure 1**

Complete **Table 1** by:

- Identifying the muscles labelled A, B and C in **Figure 1**.
- Stating the role of each muscle.

	(a) Muscle	(b) Role of the muscle
<b>A</b>	(1)	(1)
<b>B</b>	(1)	(1)
<b>C</b>	(1)	(1)

**Table 1**

**(Total for Question 2 = 6 marks)**



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3 **Figure 2** shows a long jumper.



(Source: Photo by Tobias Heyer/Bongarts/Getty Images)

**Figure 2**

Examine the antagonistic muscle action taking place at the elbow and the hip in **Figure 2** that allows the long jumper to achieve this position.

**Elbow**

(3)

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**Hip**

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**(Total for Question 3 = 6 marks)**



4 **Figure 3** shows steeplechase athletes running a race. The race involves running 3000m and jumping hurdles.



Running 3000m

(Source: © FABRICE COFFRINI/Getty Images)



Jumping hurdles

(Source: © PEDRO UGARTE/Getty Images)

**Figure 3**

Examine how **two** different muscle fibre types are used by the athletes in **Figure 3** during the different parts of the race.

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(Total for Question 4 = 6 marks)



5 **Figure 4** shows a boxer who has a cut to the face.



(Source: Photo by Christian Fischer/Getty Images)

**Figure 4**

(a) Explain why platelets are important to athletes in contact sports such as boxing.

(2)

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(b) State **one** function of plasma.

(1)

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- (c) To ensure blood flow to the working muscles, vasoconstriction occurs in some of the boxer's blood vessels.

State the meaning of the term vasoconstriction.

(1)

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- (d) State, giving an example for each, **two different** methods used to reduce the risk of injury during a boxing match.

(4)

Method and example 1

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Method and example 2

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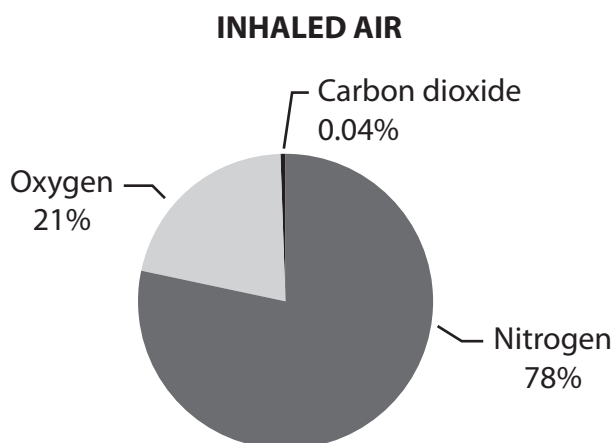
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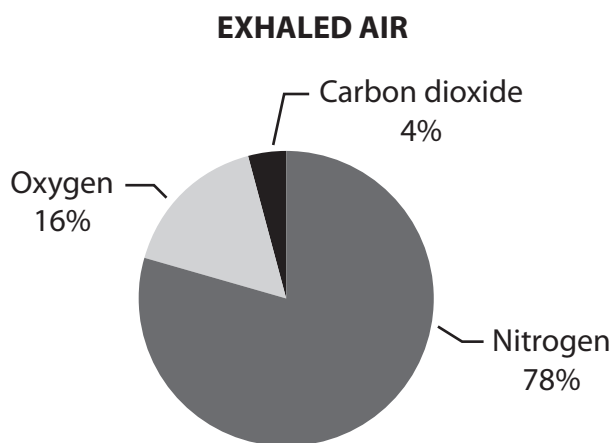
**(Total for Question 5 = 8 marks)**



6 **Figures 5 and 6** show the percentages of oxygen, carbon dioxide and nitrogen in the air inhaled and exhaled by a long distance runner while training.



**Figure 5**



**Figure 6**

(a) Analyse, using the data in **Figures 5 and 6**, the difference between the runner's inhaled and exhaled air.

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(b) Explain why there is a difference in the amount of oxygen and carbon dioxide in inhaled and exhaled air whilst the long distance runner is training.

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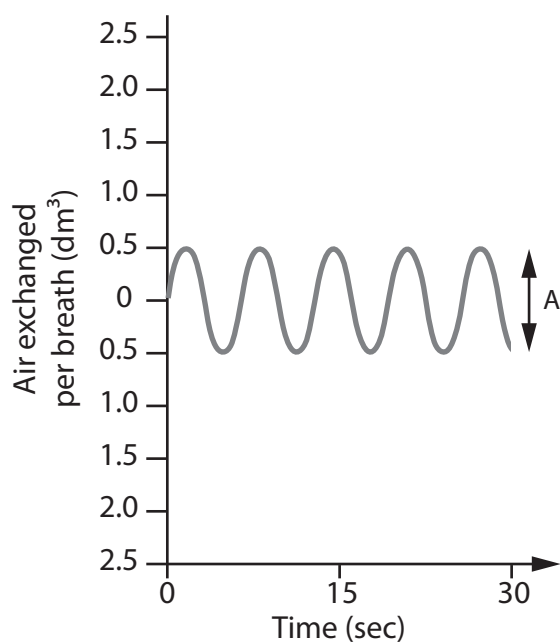
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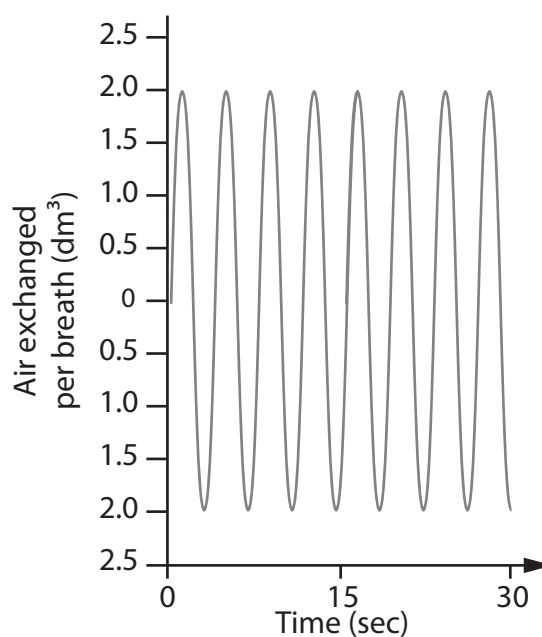
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The graphs in **Figures 7 and 8** show the runner's depth and rate of breathing at rest and during exercise.



**Figure 7 - At rest**



**Figure 8 - During exercise**

(c) (i) Identify, using the data in **Figure 7**, the name of the lung volume labelled A. (1)

(ii) Explain **two** reasons why **Figure 8** represents the runner's breathing during exercise. (4)

Reason 1

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Reason 2

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(Total for Question 6 = 11 marks)

7 Statements A and B in **Table 2** show how energy is released aerobically and anaerobically.

Statement	Energy release	
<b>A</b>	Glucose + oxygen 	carbon dioxide + water + energy
<b>B</b>	Glucose 	lactic acid + energy

**Table 2**

(a) Justify why **Statement A** in **Table 2** shows aerobic energy release.

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(b) Explain **two** functions of the cardiovascular system that enable a long distance cyclist to perform well in their event.

(6)

Function 1

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Function 2

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**(Total for Question 7 = 8 marks)**

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8 Lever systems are made up of four parts. One of these parts is the lever.

(a) State the **other** three parts of a lever system.

(3)

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Third class lever systems work at a mechanical disadvantage.

(b) Explain the term mechanical disadvantage.

(2)

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**(Total for Question 8 = 5 marks)**



9 Movement patterns occur in planes and around axes.

Complete **Table 3** by:

- (a) Stating the plane **and** axis for the tucked somersault.  
 (b) Stating the plane **and** axis for the full twist.

	Movement pattern	Plane	Axis
(a)	 Tucked somersault	(1)	(1)
(b)	 Full twist	(1)	(1)

(Source: Photos by David Ramos/Getty Images,  
and Julian Finney/Getty Images)

**Table 3**

**(Total for Question 9 = 4 marks)**





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**10** Components of fitness help us to perform well in sport.

Complete **Table 4** by:

- (a) Stating the component of fitness being described.
- (b) Giving a specific example of how the component of fitness is used in a sport of your choice.

<b>Description</b>	<b>(a) Component of fitness being described</b>	<b>(b) Specific example of use in sport</b>
The ability to exercise the entire body for long periods of time without tiring	(1)	(1)
The ability to change the position of the body quickly while maintaining control of the movement	(1)	(1)
The ability to retain the body's centre of mass above the base of support	(1)	(1)

**Table 4**

**(Total for Question 10 = 6 marks)**



11 Warm-ups are an important part of preparing for activity.

Complete **Table 5** below by stating:

- (a) Two phases of a warm-up.
- (b) How each phase helps a performer prepare for their activity.

	(a) Phase	(b) How phase helps a performer prepare for their activity
1	(1)	(1)
2	(1)	(1)

**Table 5**

**(Total for Question 11 = 4 marks)**



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**12** Eric is a 100m sprinter. He trains regularly using Fartlek training, plyometrics and sprint interval training.

Evaluate the likely effects of these training methods on Eric’s fitness for sprinting and his sprinting performance.

(9)

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(Total for Question 12 = 9 marks)



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13 **Figure 9** shows two canoeists during a competition.

To do well in competition, canoeists need good strength, flexibility and speed.



(Source: Photo by technotr/Getty Images)

**Figure 9**

**Table 6** shows the fitness tests these canoeists used to assess their fitness.

sit and reach test	30m sprint	one-minute press-up test
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**Table 6**

Discuss the suitability of using the fitness tests shown in **Table 6** to assess the fitness of the canoeists for their sport.

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(Total for Question 13 = 9 marks)

**TOTAL FOR PAPER = 90 MARKS**

