

Pearson Edexcel GCSE
Paper Reference 3PE0/01

Physical Education (Short Course)

Component 1: Theory

Wednesday 15 May 2019 – Morning

Time: 1 hour 30 minutes
plus your additional time allowance

You do not need any other materials.

See the Instructions, Information and Advice on the next page.

Candidate surname					
Other names					
Centre Number					
Candidate Number					

X58387RA

Instructions

- Use **BLACK** ink or ball-point pen.
- **FILL IN THE BOXES** on the front 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 **80**.
- 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.
- Try to answer every question.
- Check your answers if you have time at the end.

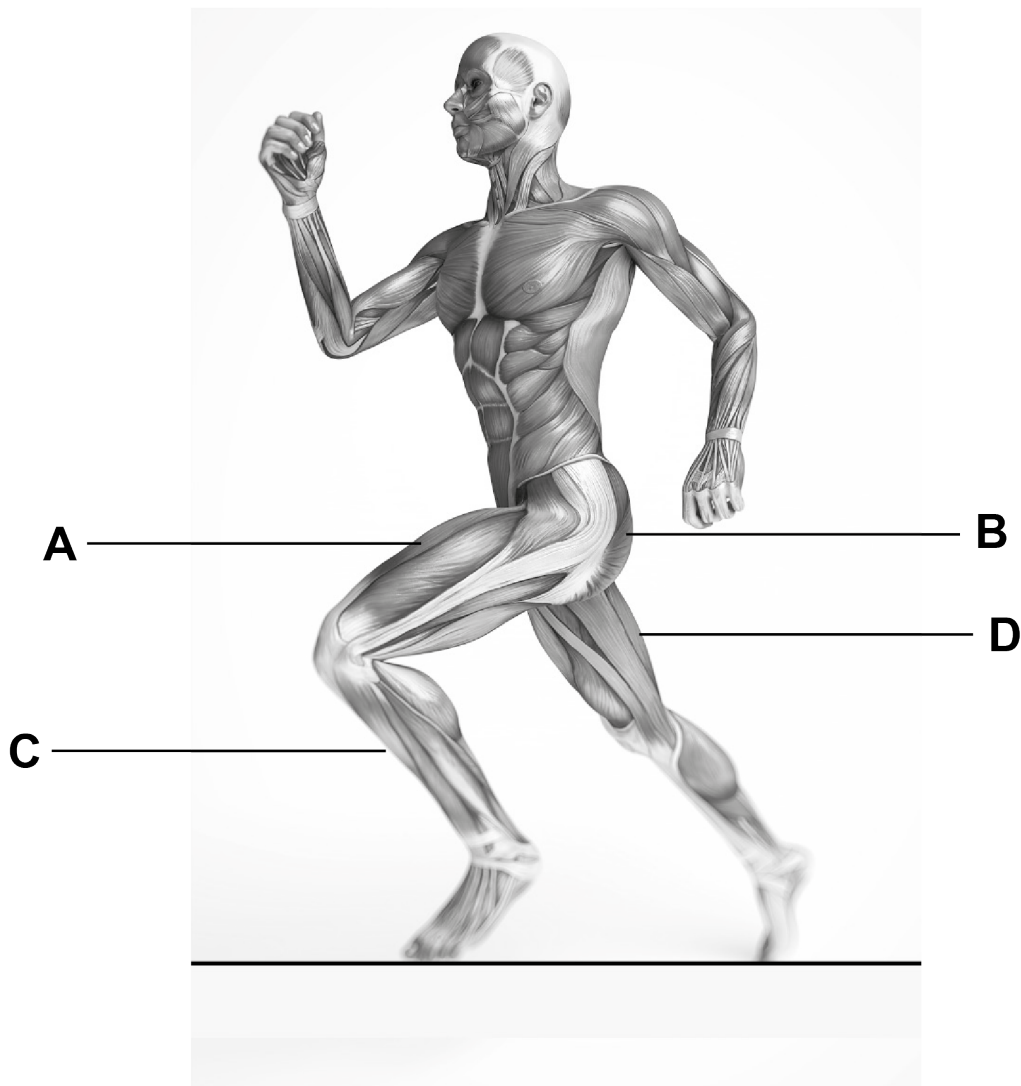
(Turn over)

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 FIGURE 1 shows the muscular system while running.

FIGURE 1



(Turn over)

For Questions 1(a), 1(b) and 1(c) use Figure 1 on the previous page to decide whether A, B, C or D is correct.

(a) Which ONE of the following is the gluteus maximus? (1 mark)

☐ **A Muscle A**

☐ **B Muscle B**

☐ **C Muscle C**

☐ **D Muscle D**

(Question continues on next page)

(Turn over)

(b) Which ONE of the following states the role of muscle D? (1 mark)

- ☐ **A Extension of the leg at the hip**
- ☐ **B Extension of the leg at the knee**
- ☐ **C Flexion of the leg at the knee**
- ☐ **D Plantar flexion of the ankle**

(c) Which ONE of the following muscles works antagonistically with muscle D? (1 mark)

- ☐ **A Muscle A**
- ☐ **B Muscle B**
- ☐ **C Muscle C**
- ☐ **D Muscle D**

(Question continues on next page)

(Turn over)

(d) Which ONE of the following blood vessels carries oxygenated blood back to the heart? (1 mark)

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

(e) Which ONE of the following is responsible for clotting the blood? (1 mark)

- ☐ **A Plasma**
- ☐ **B Platelets**
- ☐ **C Red blood cells**
- ☐ **D White blood cells**

(Question continues on next page)

(Turn over)

- (f) The data in TABLE 1 shows oxygen levels in the blood before and after gas exchange.

TABLE 1

	Oxygen level BEFORE gas exchange	Oxygen level AFTER gas exchange
A	High	High
B	High	Low
C	Low	High
D	None	Low

Which ONE of the following is the MOST likely level of oxygen in the blood before and after gas exchange at the muscle during exercise?
(1 mark)

☐ A High – High

☐ B High – Low

☐ C Low – High

☐ D None – Low

(Question continues on next page)

(Turn over)

(g) Which ONE of the following is found inside the lungs? (1 mark)

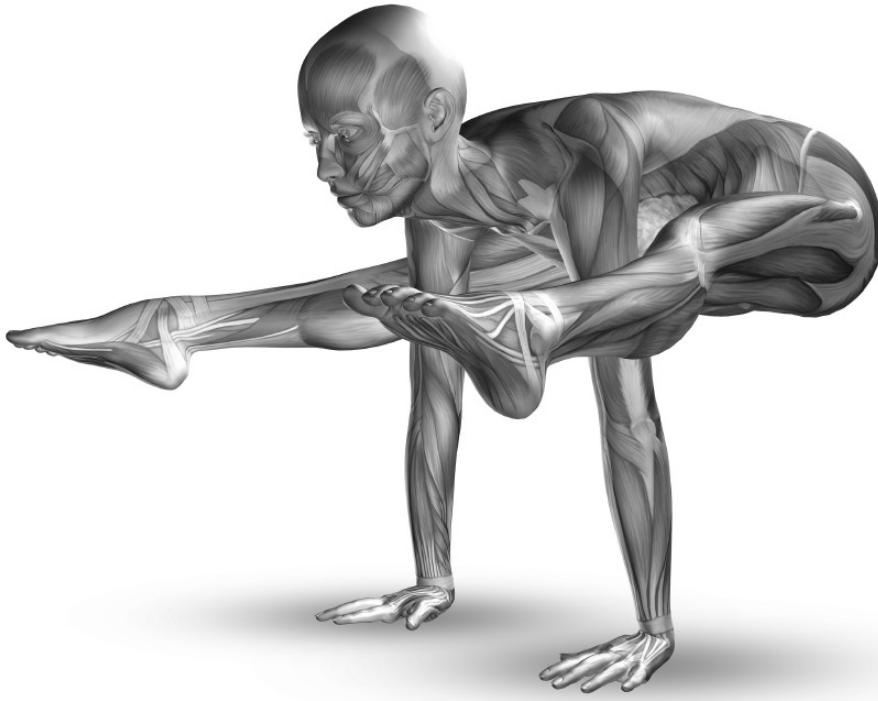
- ☐ **A Bronchioles**
- ☐ **B Diaphragm**
- ☐ **C Semi-lunar valves**
- ☐ **D Septum**

(Total for Question 1 = 7 marks)

(Turn over)

2 **FIGURE 2** shows the muscular system of a gymnast.

FIGURE 2



(Continues on next page)

(Turn over)

- (a) Examine the antagonistic muscle action taking place at the elbow in FIGURE 2 that allows the gymnast to achieve this position. (3 marks)

(Question continues on next page)

(Turn over)

- (b) The gymnast in FIGURE 2 is supporting her body weight using the bones in the wrist.

Classify the bones of the wrist. (1 mark)

(Question continues on next page)

(Turn over)

- (c) Explain, using examples, TWO functions of the skeletal system that help the gymnast move her lower body into this position.

(i) Function 1 (3 marks)

(Continue answer on next page)

(Turn over)

(ii) Function 2 (3 marks)

(Total for Question 2 = 10 marks)

- 3 **FIGURE 3** shows a basketball player jumping to shoot at the basket.

FIGURE 3



(Continues on next page)

(Turn over)

- (a) Explain the MAIN muscle fibre type that is used to jump high when taking the basketball shot.
(3 marks)

(Question continues on next page)

(Turn over)

- (b) During a game of basketball vascular shunting takes place.

Describe what happens to blood flow during vascular shunting. (4 marks)

(Question continues on next page)

(Turn over)

- (c) Explain ONE reason why vascular shunting is necessary during a game of basketball. (3 marks)**

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(Continue answer on next page)

(Turn over)

(Total for Question 3 = 10 marks)

4 Exercise causes short-term effects on our body systems.

Complete TABLE 2 on the next page by:

- (a) Stating ONE short-term effect of exercise on each of the named body systems. (1 mark each)**
- (b) Giving a specific example of the importance of this short-term effect on the performer during exercise. (1 mark each)**

(Continues on next page)

(Turn over)

TABLE 2

	(a) Short-term effect of exercise	(b) Importance to the performer exercising
Cardiovascular system		
Muscular system		
Respiratory system		

(Total for Question 4 = 6 marks)

(Turn over)

- 5 **FIGURE 4** shows a performer during a weight training session.

FIGURE 4



(Continues on next page)

(Turn over)

- (a) Identify the class of lever system in use when the performer moves from standing onto her toes in FIGURE 4. (1 mark)

- (b) Give another example of the use of THIS lever system, at the ankle, in a sporting situation of your choice. (1 mark)

(Question continues on next page)

(Turn over)

- (c) The lever system being used in FIGURE 4 provides a mechanical advantage.

Define the meaning of the term mechanical advantage. (1 mark)

(Total for Question 5 = 3 marks)

6 Complete the following statements about movement patterns. (1 mark each)

(a) Movement patterns occur in body planes and around

(b) There are three main body planes: sagittal, transverse and

(c) A tucked front somersault takes place in the sagittal plane around the

(d) A full twist occurs in the transverse plane around the

(Total for Question 6 = 4 marks)

(Turn over)

7 State, using examples, TWO ways that training to increase fitness can have a NEGATIVE effect on our physical health.

(i) Negative effect 1 (2 marks)

(Question continues on next page)

(Turn over)

(ii) Negative effect 2 (2 marks)

(Total for Question 7 = 4 marks)

(Turn over)

- 8 To make sure training is effective a training programme must be carefully designed, developed, monitored and evaluated.

Explain why it is important to monitor a training programme. (3 marks)

(Continue answer on next page)

(Turn over)

(Total for Question 8 = 3 marks)

9 Mason is a 21-year-old sprinter.

State, using examples, TWO reasons why drinking alcohol would have a negative impact on Mason's sprinting performance.

(i) Reason 1 (2 marks)

(Question continues on next page)

(Turn over)

(ii) Reason 2 (2 marks)

(Total for Question 9 = 4 marks)

(Turn over)

- 10 Michael has recently joined a running club to train with others for the Great North Run.**

The Great North Run is a long distance race over 13.1 miles.

- (a) Explain, using examples, how Michael's physical, emotional and social health could improve due to his training.**

- (i) Physical health (2 marks)**

(Question continues on next page)

(Turn over)

(ii) Emotional health (2 marks)

(Question continues on next page)

(Turn over)

(iii) Social health (2 marks)

(Question continues on next page)

(Turn over)

TABLE 3 shows the percentage of carbohydrates in Michael's diet for the five days before his race.

TABLE 3

Days before the race	Percentage of carbohydrates in diet
5	35
4	70
3	80
2	85
1	85

- (b) Examine, using the data in TABLE 3, how the change in Michael's diet will affect his performance in the race. (4 marks)**

(Continue answer on next page)

(Turn over)

(Total for Question 10 = 10 marks)

- 11 It is important for sports performers to be at their optimum weight when competing.**

(a) Define the term optimum weight. (1 mark)

TABLE 4 states the weight and height of three different sports performers.

TABLE 4

Sports performer	Weight (kg)	Height (m)
Rugby player	115	1.95
High jumper	77	1.95
Jockey	57	1.68

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(Turn over)

- (b) Justify, using the data in TABLE 4, why the high jumper has a different optimum weight compared to the other two sports performers. (4 marks)**

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(Total for Question 11 = 5 marks)

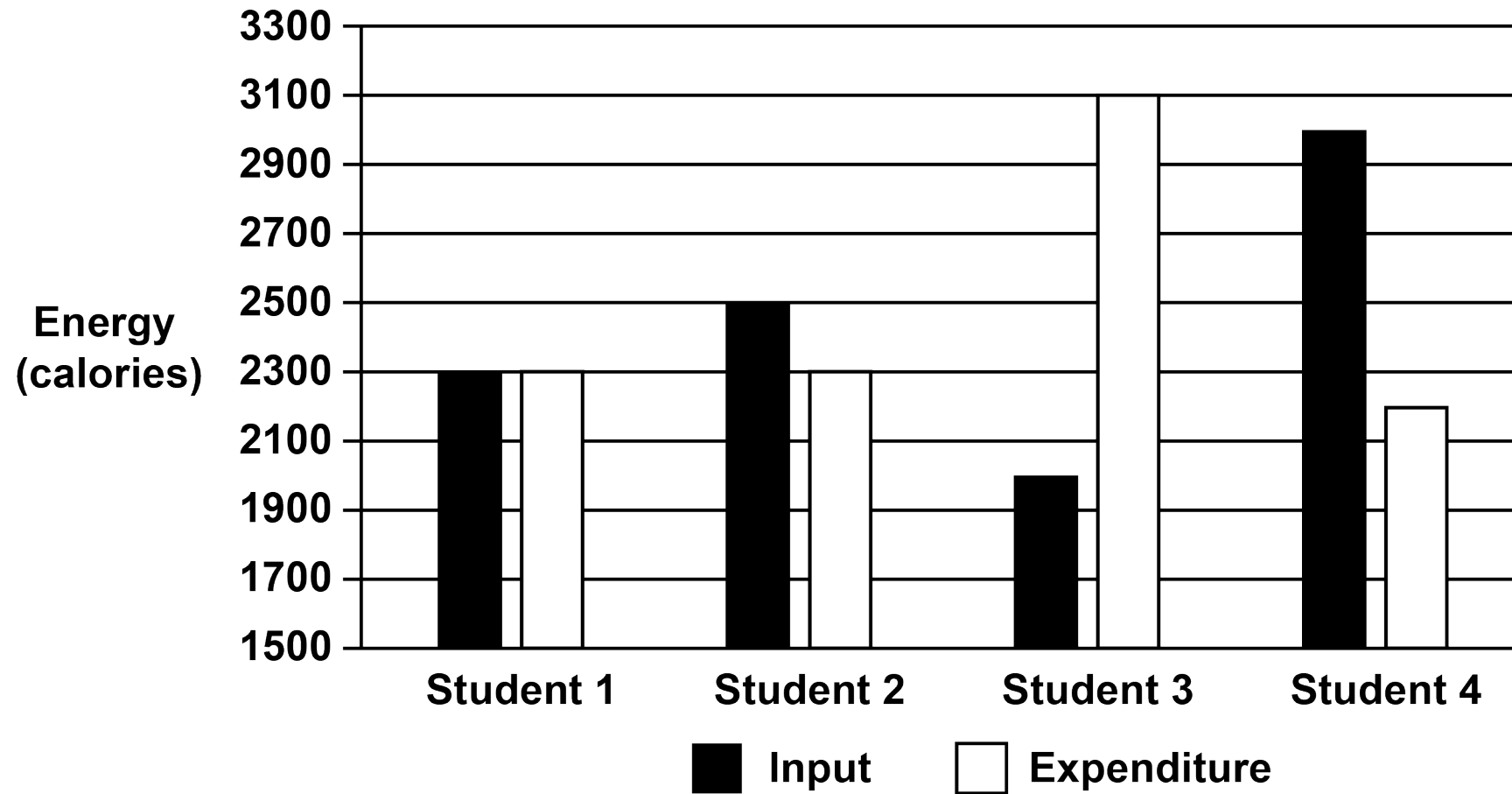
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- 12 Four students kept a record of the number of calories they ate (energy input) and the energy they used (energy expenditure).**

FIGURE 5 on the next page shows the students energy input and energy expenditure.

At the start of the training, each student is a healthy weight. The students take part in the same type of training but for different lengths of time.

FIGURE 5



(Turn over)

- (a) Identify, using the data in FIGURE 5, the student who completes the most training. (1 mark)

- (b) Analyse the data in FIGURE 5 to determine which student is most likely to maintain a healthy weight. (4 marks)

(Continue answer on next page)

(Turn over)

(Total for Question 12 = 5 marks)

13 Tennis players will work at different intensities during a match.

FIGURE 6 shows three different phases of a tennis match.

FIGURE 6



During a serve



During a long intense rally



Resting between games

(Turn over)

Examine the importance of the respiratory system during the different phases shown in FIGURE 6. (9 marks)

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(Continue answer on next page)

(Turn over)

(Turn over)

(Turn over)

(Turn over)

Sources

Q1, Figure 1:

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Q2, Figure 2:

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Q3, Figure 3:

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Q5, Figure 4:

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Q13, Figure 6:

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