

Pearson Edexcel Level 3 GCE
Paper Reference 9PE0/01

Physical Education

Advanced

Component 1: Scientific Principles of Physical Education

Thursday 23 May 2019 – Afternoon

Time: 2 hours 30 minutes
plus your additional time allowance

You must have:

Calculator

Ruler

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

Candidate surname					
Other names					
Centre Number					
Candidate Number					

X60163A

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 in Sections A and B.
- Answer the questions in the spaces provided – there may be more space than you need.

Information

- The total mark for this paper is 140.
- The marks for **EACH** question are shown in brackets – use this as a guide as to how much time to spend on each question.
- Questions marked with an **ASTERISK (*)** require candidates to use their knowledge and understanding from across the course of study in their answer.
- Calculators can be used.

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)

SECTION A – Applied anatomy and physiology

Answer ALL questions. Write your answers in the spaces provided.

1 Define the following: (1 mark each)

(a) agonist

(Continue answer on next page)

(Turn over)

(b) antagonist.

(Total for Question 1 = 2 marks)

(Turn over)

2 Using a sporting example, summarise Newton's Law of Acceleration. (2 marks)

(Total for Question 2 = 2 marks)

3 Summarise the stretch-shortening cycle. (3 marks)

[illegible]

(Total for Question 3 = 3 marks)

(Turn over)

4 Summarise the functions of THREE anatomical structures of the respiratory system. (3 marks)

[illegible]

(Total for Question 4 = 3 marks)

(Turn over)

5 (a) Define the term partial pressure. (1 mark)

(b) Explain the role of pressure gradients in ventilation. (4 marks)

(Continue answer on next page)

(Turn over)

(Turn over)

6 Explain how FOUR different characteristics of slow twitch muscle fibres (type 1) enable them to be better suited to endurance activities. (4 marks)

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(Turn over)

(Total for Question 6 = 4 marks)

7 Explain how THREE structural adaptations cause a corresponding functional response in the cardiovascular system as a result of endurance-based training. (6 marks)

[illegible]

(Continue answer on next page)

(Turn over)

8 Explain how the body responds to priming exercise used as part of a warm-up. (6 marks)

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9 Examine the function of the neuromuscular system in a muscle contraction. (8 marks)

[illegible]

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(Turn over)

(Turn over)

(Total for Question 9 = 8 marks)

10 Examine how athletes might adapt their subsequent training in order to cope with the effects of exercise induced muscle damage (EIMD) and delayed onset of muscle soreness (DOMS). (8 marks)

[illegible]

(Continue answer on next page)

(Turn over)

(Turn over)

(Total for Question 10 = 8 marks)

11 Referring to the muscles used, examine the movements produced at the shoulder. Use sporting examples to illustrate your answer. (8 marks)

[illegible]

(Continue answer on next page)

(Turn over)

(Turn over)

(Total for Question 11 = 8 marks)

***12 Discuss how an athlete might seek to manage fatigue when performing at varying intensities.**

**Use your knowledge and understanding from across the course of study to answer this question.
(15 marks)**

[illegible]

(Continue answer on next page)

(Turn over)

(Turn over)

(Turn over)

(Turn over)

(Turn over)

(Turn over)

(Turn over)

(Total for Question 12 = 15 marks)

TOTAL FOR SECTION A = 70 MARKS

SECTION B – Exercise physiology and applied movement analysis

Answer ALL questions. Write your answers in the spaces provided.

13 Define the term $\dot{V}O_2$ Max. (1 mark)

(Total for Question 13 = 1 mark)

(Turn over)

14 Outline the differences between sub-maximal aerobic exercise and maximal aerobic exercise. (4 marks)

[illegible]

(Continue answer on next page)

(Turn over)

(Total for Question 14 = 4 marks)

15 Outline TWO advantages and TWO disadvantages of using parachutes when resistance training. (4 marks)

[illegible]

(Continue answer on next page)

(Turn over)

(Total for Question 15 = 4 marks)

16 Describe the benefits of using technology to monitor work rate for games players. (4 marks)

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(Continue answer on next page)

(Turn over)

(Total for Question 16 = 4 marks)

17 Outline FIVE different ways athletes can measure the intensity of their training. (5 marks)

[illegible]

(Continue answer on next page)

(Turn over)

(Total for Question 17 = 5 marks)

18 Outline the protocol for the Wingate test. (5 marks)

[illegible]

(Continue answer on next page)

(Turn over)

(Total for Question 18 = 5 marks)

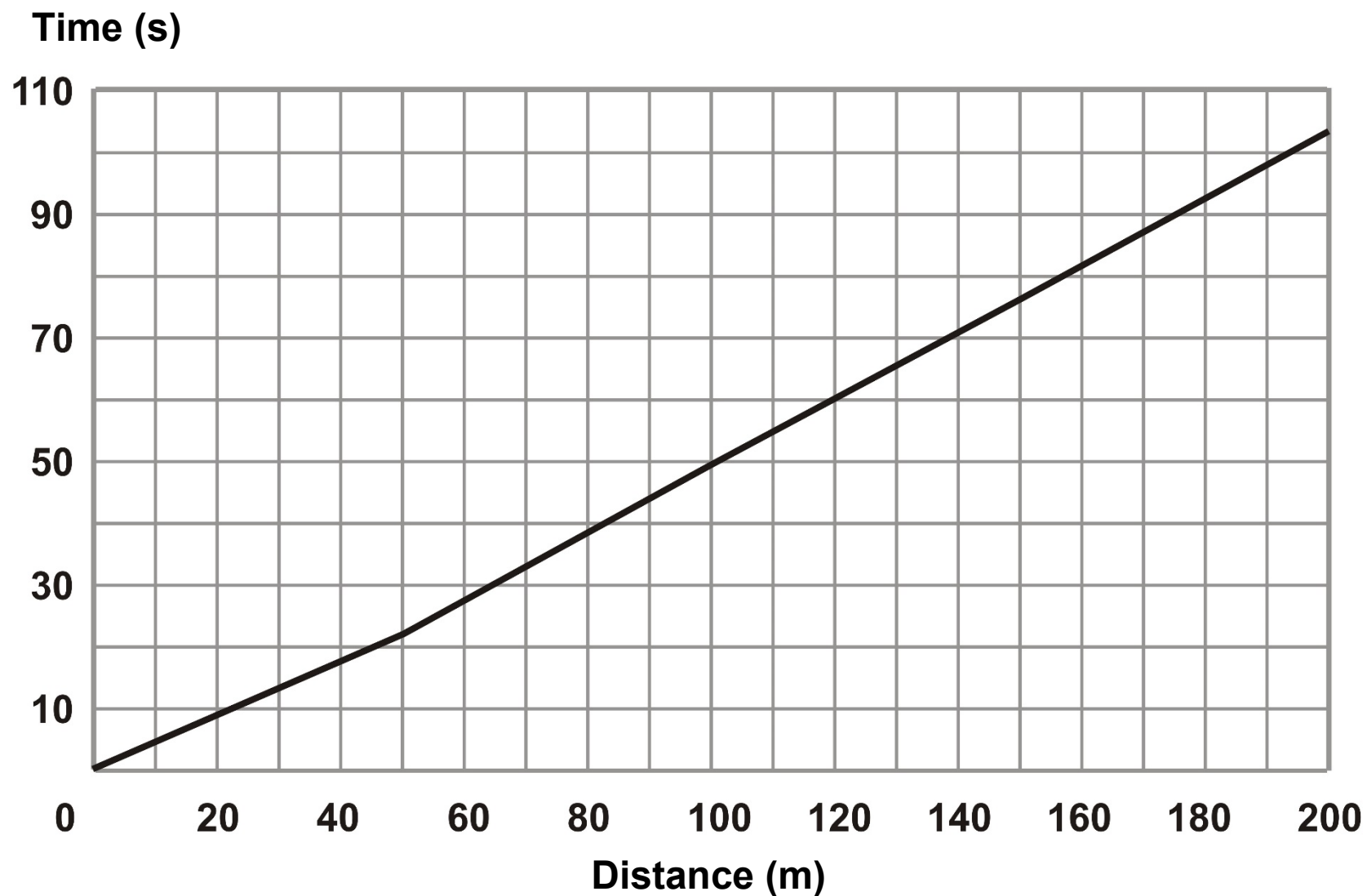
19 Explain THREE physiological determinants of running performance using sporting examples. (6 marks)

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20 The graph below shows the breakdown of a 200 m swimmer's performance.



(Turn over)

- (a) Calculate the split time for each 50 metres.
(4 marks)

Distance (m)	Split times (s)
0–50	
50–100	
100–150	
150–200	

- (b) Calculate the average speed of the swimmer over 200 m. (1 mark)

_____ m/s

(Total for Question 20 = 5 marks)

(Turn over)

21 Explain the benefits of speed agility quickness (SAQ) training to games players. (5 marks)

[illegible]

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(Total for Question 21 = 5 marks)

22 Using sporting examples, assess the forces that affect the projectile motion of an object in flight. (8 marks)

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(Turn over)

(Total for Question 22 = 8 marks)

23 Examine the most suitable fitness tests to determine an athlete's anaerobic capacity. (8 marks)

[illegible]

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(Turn over)

(Total for Question 23 = 8 marks)

24 Discuss how an athlete might seek to prevent injuries. (15 marks)

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(Turn over)

(Turn over)

(Turn over)

(Turn over)

(Total for Question 24 = 15 marks)

TOTAL FOR SECTION B = 70 MARKS

TOTAL FOR PAPER = 140 MARKS