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					

Q60163A

Pearson

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.

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)

(b) antagonist.

(Total for Question 1 = 2 marks)

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)

(Total for Question 3 = 3 marks)

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

(Total for Question 4 = 3 marks)

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

(Question continues on next page)

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

(Continue answer on next page)

(Total for Question 5 = 5 marks)

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

(Continue answer on next page)

(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)**

(Continue answer on next page)

(Total for Question 7 = 6 marks)

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

(Continue answer on next page)

(Total for Question 8 = 6 marks)

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

(Continue answer on next page)

(Continue answer on next page)

(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)**

(Continue answer on next page)

(Continue answer on next page)

(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)

(Continue answer on next page)

(Continue answer on next page)

(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)

(Continue answer on next page)

(Continue answer on next page)

(Continue answer on next page)

(Continue answer on next page)

(Continue answer on next page)

(Continue answer on next page)

(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)

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

(Continue answer on next page)

(Total for Question 14 = 4 marks)

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

(Continue answer on next page)

(Total for Question 15 = 4 marks)

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

(Continue answer on next page)

(Total for Question 16 = 4 marks)

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

(Continue answer on next page)

(Total for Question 17 = 5 marks)

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

(Continue answer on next page)

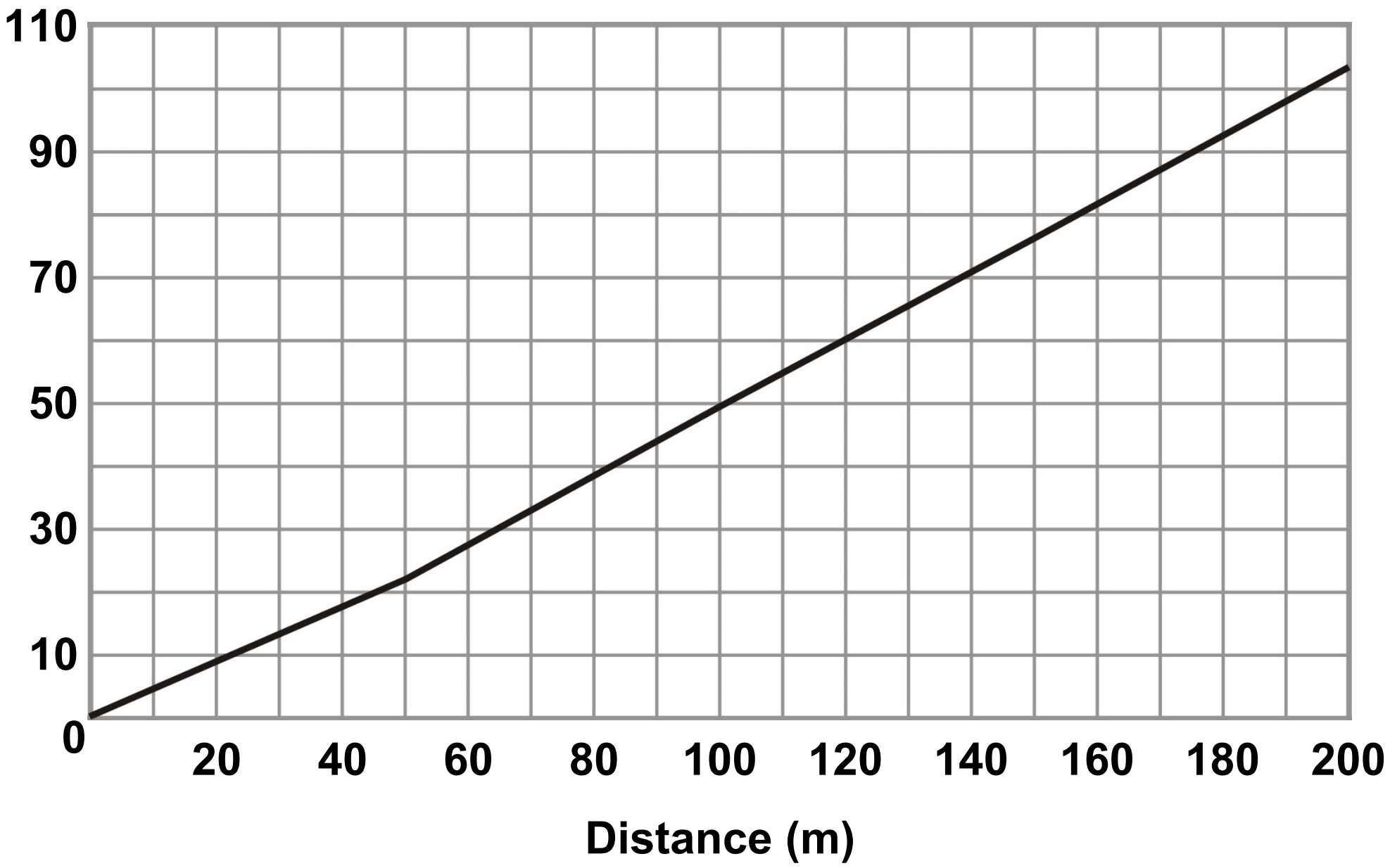
(Total for Question 18 = 5 marks)

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

(Continue answer on next page)

(Total for Question 19 = 6 marks)

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



(Continues on next page)

(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)

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

(Continue answer on next page)

(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)

(Continue answer on next page)

(Continue answer on next page)

(Total for Question 22 = 8 marks)

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

(Continue answer on next page)

(Continue answer on next page)

(Total for Question 23 = 8 marks)

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

(Continue answer on next page)

(Continue answer on next page)

(Continue answer on next page)

(Continue answer on next page)

(Continue answer on next page)

(Continue answer on next page)

(Total for Question 24 = 15 marks)

TOTAL FOR SECTION B = 70 MARKS

TOTAL FOR PAPER = 140 MARKS