

Please check the examination details below before entering your candidate information

Candidate surname

Other names

Centre Number

Candidate Number

Pearson Edexcel Level 3 GCE

Friday 24 May 2024

Morning (Time: 2 hours 30 minutes)

Paper
reference

9PE0/01

Physical Education

Advanced

COMPONENT 1: Scientific Principles of Physical Education

You must have:

Calculator

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 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.*
- The question marked with an **asterisk** (*) requires 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 ►

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SECTION A – Applied anatomy and physiology

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

1 Figure 1 shows an image of the vertebral column.

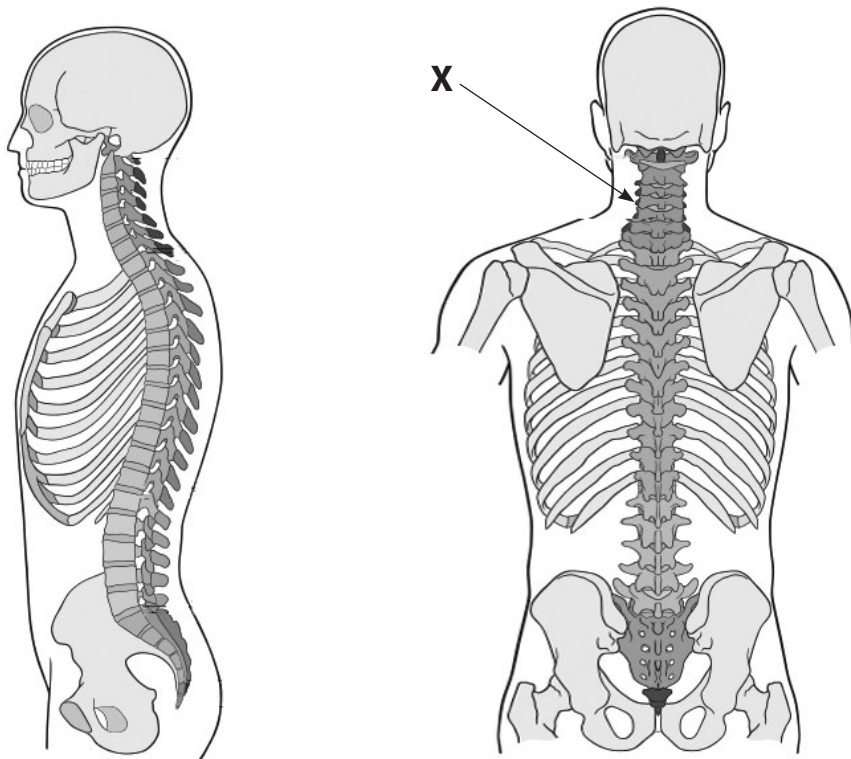


Figure 1

(a) Name the region labelled **X** at the top of the vertebral column in **Figure 1**.

(1)

(b) Name the region designed to carry the most load.

(1)

(Total for Question 1 = 2 marks)

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3 Summarise how wave summation can increase force output.

(4)

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(Total for Question 3 = 4 marks)

4 Summarise **four** advantages of an athlete using the aerobic energy pathway.

(4)

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(Total for Question 4 = 4 marks)



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5 **Figure 2** shows the horizontal forces acting on a swimmer. The swimmer is moving at a constant speed. Force A is 100 N (this is the forward arrow).

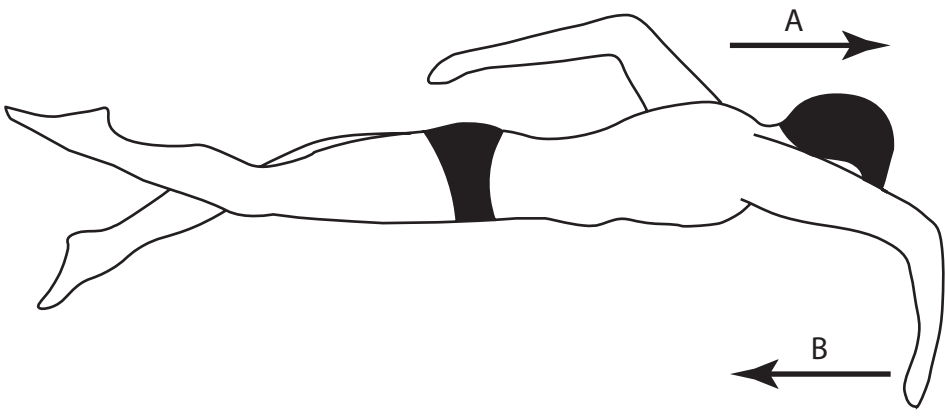


Figure 2

(a) Give force B (in Newtons). (1)

(b) The swimmer accelerates by increasing force A to 120 N.
Calculate the size of the resultant force (in Newtons) acting on the swimmer as they accelerate. (1)

(c) Describe **three** factors that affect the fluid friction on a swimmer. (3)

(Total for Question 5 = 5 marks)



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6 Summarise the roles of troponin, tropomyosin and myosin in muscle contraction. (3)

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(Total for Question 6 = 3 marks)

7 Summarise **six** chronic adaptations that occur within skeletal muscle as a result of a cross training programme. (6)

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(Total for Question 7 = 6 marks)



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8 Describe how the duration and intensity of exercise affect the fuel sources used.

(4)

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(Total for Question 8 = 4 marks)

9 Outline how oxygen delivery to the muscles is increased during exercise.

(5)

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(Total for Question 9 = 5 marks)



10 Examine how athletes use each of the three lever systems in sporting activities.

(8)

Area with horizontal dotted lines for writing the answer to Question 10.

(Total for Question 10 = 8 marks)

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11 Examine the physiological responses of the respiratory system at the start of exercise.

(8)

Area with horizontal dotted lines for writing the answer to Question 11.

(Total for Question 11 = 8 marks)



12 Discuss the stages of recovery and their application to different sporting contexts.

(15)

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(Total for Question 12 = 15 marks)

TOTAL FOR SECTION A = 70 MARKS



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SECTION B – Exercise physiology and applied movement analysis

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

13 Exercise economy is a principal determinant of running performance.

List **three** other principal determinants of running performance.

(3)

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(Total for Question 13 = 3 marks)

14 Outline **three** factors that determine how athletes achieve optimal body weight for performance.

(3)

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(Total for Question 14 = 3 marks)



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15 (a) Define anaerobic capacity.

(1)

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(b) Identify **three** factors that determine an athlete's anaerobic capacity.

(3)

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(Total for Question 15 = 4 marks)

16 Describe **four** different types of assisted training.

(4)

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(Total for Question 16 = 4 marks)



An athlete is at a shot put competition.

17 (a) During their first attempt, the athlete puts a shot with a mass of 7.26 kg and an average acceleration of 19 m/s^2 .

Calculate the average force.

(2)

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(b) On their second attempt, the athlete's put is in the air for 0.38 seconds and reaches a distance of 18 metres.

Calculate the average speed of the shot put.

(2)

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(Total for Question 17 = 4 marks)



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22 Examine the most appropriate methods of training to improve an athlete's maximal aerobic fitness.

(8)

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(Total for Question 22 = 8 marks)



23 Examine the factors that could affect the reliability of fitness testing.

(8)

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(Total for Question 23 = 8 marks)

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***24** Evaluate the role that technology plays in aiding an athlete in their preparation for an event.

Use your knowledge and understanding from across the course of study to answer this question.

(15)

Area with horizontal dotted lines for writing the answer.



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(Total for Question 24 = 15 marks)

TOTAL FOR SECTION B = 70 MARKS
TOTAL FOR PAPER = 140 MARKS



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