Please check the examination details below before entering your candidate information

| Candidate surname | Other names |
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| | |

**Pearson Edexcel Level 3 GCE**

| Centre Number | Candidate Number |
|---|---|
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# Thursday 21 May 2020

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.*
- The question labelled with an **asterisk** (*) requires candidates to use their knowledge and understanding from across the course of study in their answer.
- Calculators can be used.

### 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.*

### 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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Pearson

## SECTION A – Applied anatomy and physiology

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

**1** Define the following:

(a) Supination

**(1)**

(b) Adduction

**(1)**

(c) Abduction

**(1)**

**(Total for Question 1 = 3 marks)**

**2** Using a sporting example, summarise Newton's Law of Inertia.

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

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**3** Describe the **three** elements of the third class lever at the elbow joint in a biceps curl.

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

**4** Explain how the structures of **four** different components of the cardiovascular system enable them to be suited to their functions.

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

**5** (a) Define the term vital capacity.

**(1)**

(b) Outline the change in **four** respiratory values during aerobic exercise.

**(4)**

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

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**6** Explain how **four** characteristics of type IIx muscle fibres enable them to be suited to anaerobic physical activities.

**(Total for Question 6 = 4 marks)**

**7** Explain how training can adjust the recruitment of different fibre types.

**(Total for Question 7 = 6 marks)**

**8** Summarise the different roles a muscle can perform.

**(Total for Question 8 = 4 marks)**

**9** Examine the different forms of energy and how they are used during activity.

**(Total for Question 9 = 8 marks)**

**10** Explain how excess post-exercise oxygen consumption (EPOC) enables the body to return to homeostasis.

**(Total for Question 10 = 8 marks)**

**11** Examine how an unhealthy lifestyle can affect the cardiorespiratory system.

**(Total for Question 11 = 8 marks)**

**12** Analyse how the three energy pathways support different types of activity.

**(15)**

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**(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 maximal strength.

.....

.....

**(Total for Question 13 = 1 mark)**

**14** List **five** key elements of periodisation.

(i)

**(1)**

.....

(ii)

**(1)**

.....

(iii)

**(1)**

.....

(iv)

**(1)**

.....

(v)

**(1)**

.....

**(Total for Question 14 = 5 marks)**

**15** Using the frequency, intensity, time and type (FITT) principle, outline how an athlete could seek to improve their localised muscular endurance.

**(Total for Question 15 = 4 marks)**

**16** Outline the rate of perceived exertion (RPE) method of monitoring training intensity.

**(Total for Question 16 = 4 marks)**

**17** Describe **four** overuse injuries.

**(Total for Question 17 = 4 marks)**

**18** Summarise the advantages and disadvantages of cryotherapy for injury rehabilitation.

**(Total for Question 18 = 6 marks)**

**19** Summarise strategies an athlete can use to speed up recovery following physical activity.

**(Total for Question 19 = 4 marks)**

**20** Explain the use of supplements to improve recovery.

**(Total for Question 20 = 5 marks)**

**21** An elite runner intends to use heart rate to calculate the intensity of their training. Their current resting heart rate is 50 beats per minute and maximum heart rate is 197 beats per minute.

(a) State the Karvonen Formula.

**(1)**

.....

.....

(b) State the formula for heart rate reserve.

**(1)**

.....

.....

(c) Using Karvonen's theory, calculate the runner's heart rate reserve.

**(2)**

.....

.....

(d) Using the intensities of 60% and 80% of heart rate reserve, calculate the runner's training heart rates.

**(2)**

.....

.....

**(Total for Question 21 = 6 marks)**

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**22** Assess the factors affecting the movement of a swimmer through the water.

**(Total for Question 22 = 8 marks)**

**23** Examine how an athlete would prepare for performance in humidity.

**(Total for Question 23 = 8 marks)**

***24** Discuss ways that a performer and coach can modify technique through the application of technology in order to improve performance.

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

**(15)**

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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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