

Level 3 Cambridge Technical in Sport and Physical Activity

Time allowed: 1 hour 30 minutes

C400/2506

You can use:

- a calculator



Please write clearly in black ink. **Do not write in the barcodes.**

Centre number

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Candidate number

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First name(s)

Last name

Date of birth

D	D	M	M	Y	Y	Y	Y
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INSTRUCTIONS

- Use black ink. You can use an HB pencil, but only for graphs and diagrams.
- Write your answer to each question in the space provided. If you need extra space use the lined pages at the end of this booklet. The question numbers must be clearly shown.
- Answer **all** the questions.
- Where appropriate, your answer should be supported with working. Marks might be given for using a correct method, even if your answer is wrong.

INFORMATION

- The total mark for this paper is **70**.
- The marks for each question are shown in brackets [].
- Quality of written communication will be assessed in questions marked with an asterisk (*).
- This document has **16** pages.

ADVICE

- Read each question carefully before you start your answer.

Section A

Put a tick (✓) in the box next to the **one** correct answer for each question.

1 Which **one** of these describes the function of platelets?

(a) Aid clotting of blood

☐

(b) Carry oxygen

☐

(c) Fight infections

☐

(d) Transport nutrients

☐

[1]

2 Which type of bone are the phalanges?

(a) Flat

☐

(b) Irregular

☐

(c) Long

☐

(d) Short

☐

[1]

3 Which **one** of these is a typical value for an untrained individual's stroke volume at rest?

(a) 7 ml

☐

(b) 70 ml

☐

(c) 700 ml

☐

(d) 7000 ml

☐

[1]

4 Which muscle contracts to cause **flexion** of the vertebral column?

(a) Erector spinae

☐

(b) Pronator teres

☐

(c) Rectus abdominus

☐

(d) Supinator

☐

[1]

5 Which pair of bones are part of the **axial** skeleton?

- (a) Cranium and clavicle
- (b) Cranium and sacrum
- (c) Sacrum and scapula
- (d) Scapula and clavicle

☐
☐
☐
☐

[1]

6 Which **one** of these is a long-term effect of exercise on the **muscular** system?

- (a) Improved storage of lactic acid
- (b) Increased minute ventilation
- (c) Increased resistance to fatigue
- (d) Increased stroke volume

☐
☐
☐
☐

[1]

7 Which of these is an example of **horizontal abduction**?

- (a) Performing lunges during a warm-up
- (b) Preparing to play a forehand drive shot in tennis
- (c) The downward phase of a biceps curl
- (d) Turning the head to breathe when swimming

☐
☐
☐
☐

[1]

8 What is the alternative name for cartilaginous joints?

..... [1]

9 Describe the role of the aorta.

.....
 [1]

10 Other than carbohydrates, name **one type** of food fuel for the **aerobic** energy system.

..... [1]

Section B

11

- (a) Shape, support and movement are three functions of the skeleton.

Name **two** other functions of the skeleton.

- 1
- 2 [2]

- (b) Explain how ligaments provide stability and mobility at a joint.

Stability

.....

Mobility

..... [2]

12 Regular training can have both positive and negative long-term effects.

- (a) Describe **two positive** long-term effects of regular training on the **skeletal** system.

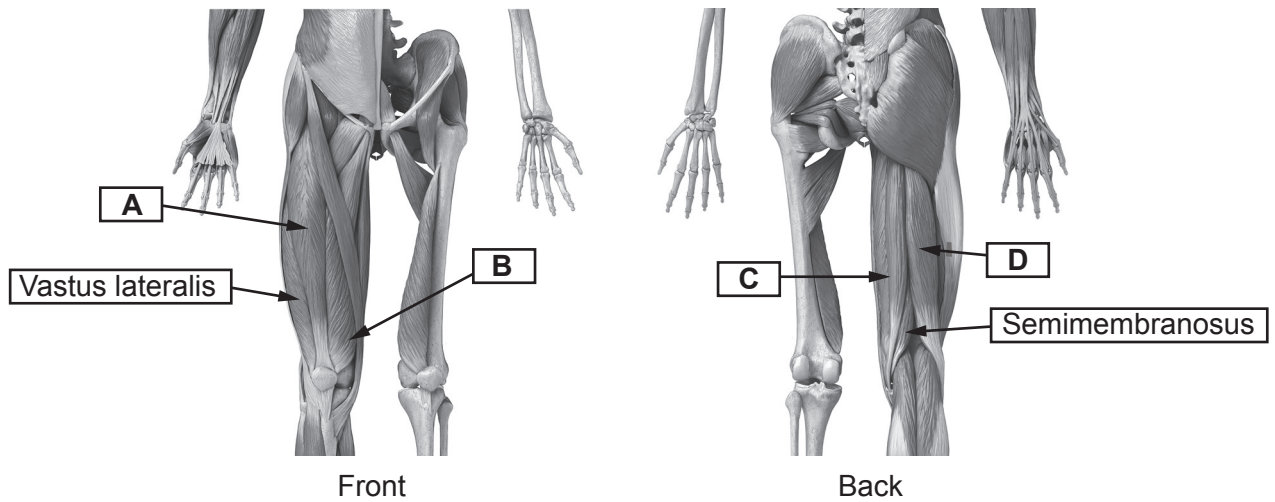
- 1
-
- 2
- [2]

- (b) Describe **one negative** long-term effect of regular training on the **skeletal** system.

.....

..... [1]

- 13 The image shows the major muscles of the upper leg viewed from both the front and back. Two muscles have been named.



Name the muscles labelled **A**, **B**, **C** and **D**.

- A**
- B**
- C**
- D** [4]

- 14 Explain how the mix of muscle fibre types used during exercise changes as intensity increases.

-
-
-
-
-
-
-
-
-
- [3]

15 As blood flows through the heart it passes through various structures.

- (a) Fill in the spaces to name the chamber, valves and blood vessel that blood passes through between the right atrium and the lungs.

Right atrium



..... (valve)



..... (chamber)



..... (valve)



..... (blood vessel)



Lungs

[4]

- (b) Describe the role of valves in the heart.

.....
 **[1]**

16

- (a) Define these terms:

Heart rate

.....

Cardiac output

.....

[2]

(b) Explain how heart rate and cardiac output increase during exercise.

.....

.....

.....

.....

.....

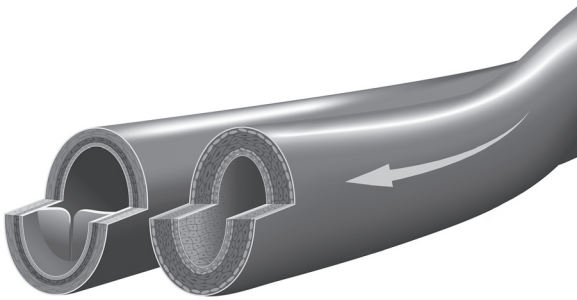
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..... [4]

17 The image below shows a vein and an artery.



Describe **three** differences between arteries and veins.

1

.....

2

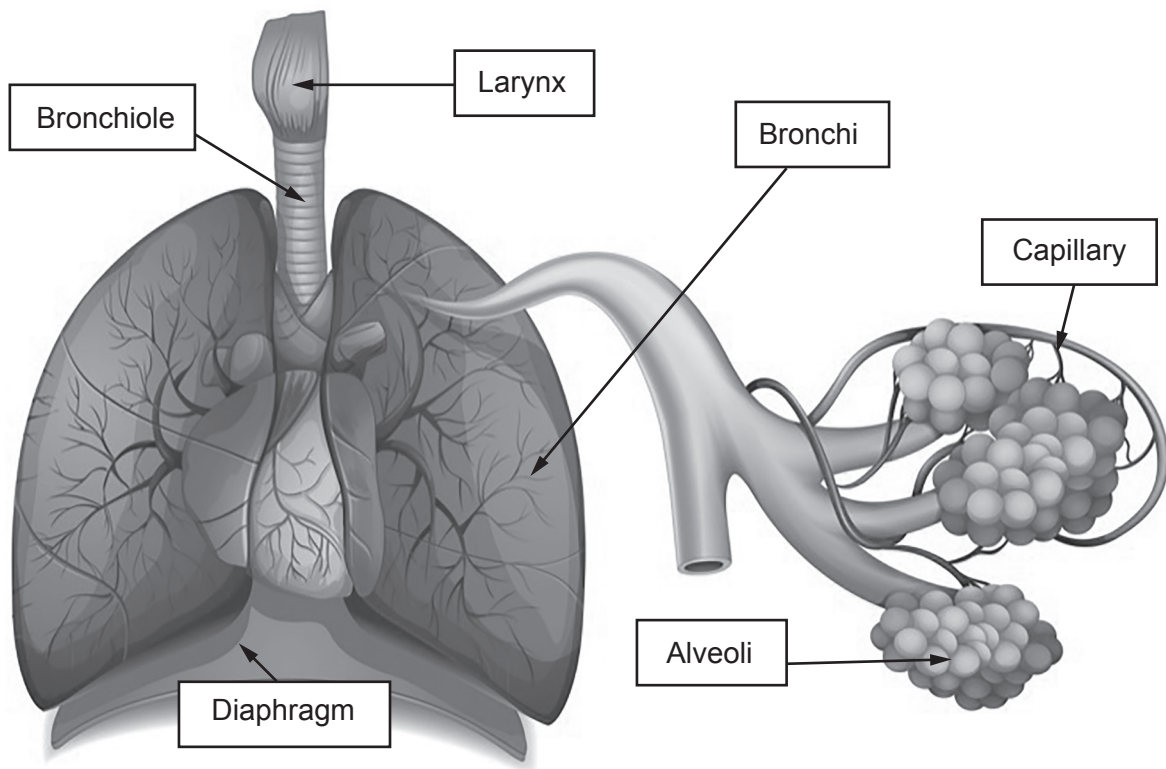
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3

.....

[3]

18 The image below shows structures of the lungs. **Two** structures are labelled **incorrectly**.



(a) Identify which **two** structures are labelled **incorrectly**.

Give the **correct** name for each of these structures.

Incorrect label Correct name

Incorrect label Correct name

[4]

(b) Describe how the mechanics of breathing cause **inspiration** at rest.

..... [4]

(c) Describe the role of the rectus abdominus as a respiratory muscle during exercise.

..... [2]

19 Fill in the paragraph to describe gaseous exchange at the alveoli.

In the alveoli the partial pressure of oxygen is and the partial pressure of carbon dioxide is

In the capillaries the partial pressure of oxygen is and the partial pressure of carbon dioxide is

The difference between the pressures of gases is known as a diffusion

Gases move from an area of pressure to an area of pressure.

The greater the difference in pressures, the the rate of gaseous exchange.

[7]

20

(a) Name the **two anaerobic** energy systems.

1

2 [2]

(b) State the **two** by-products of the **aerobic** system.

1

2 [2]

(c) Two factors determine which energy system is used. One factor is **duration** of exercise.

What is the other factor?

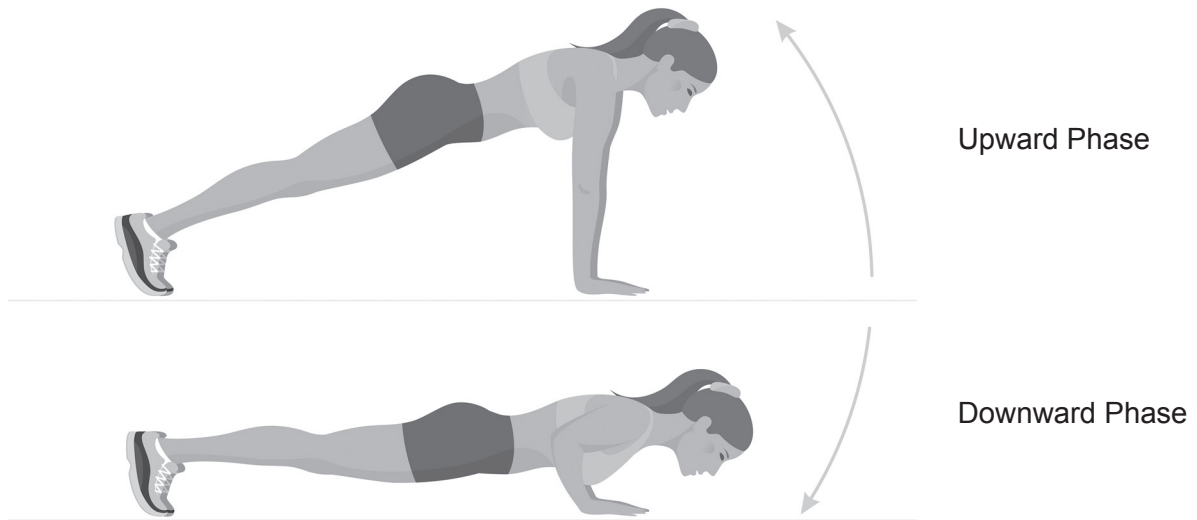
..... [1]

11
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12
Section C

21* The image shows the performance of a press up.



Analyse the movements of the elbow joint during **both phases** of the press up.

Your answer should include:

- Type of joint
- Articulating bones
- Main muscles acting and their roles in the movements.

[10]

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This image shows a blank sheet of white paper designed for writing. It features a series of evenly spaced horizontal blue lines across its entire width. A single vertical red line runs down the left side of the page, creating a narrow margin. The paper is otherwise completely empty, with no text or markings.

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