

## Thursday 10 January 2019 – Morning

### LEVEL 3 CAMBRIDGE TECHNICAL IN SPORT AND PHYSICAL ACTIVITY

05826/05827/05828/05829/05872 Unit 1: Body systems and the effects of physical activity

Duration: 1 hour 30 minutes

C400/1901



You may use:

- a calculator

First Name						Last Name				
Centre Number						Candidate Number				
Date of Birth	D	D	M	M	Y	Y	Y	Y		

#### INSTRUCTIONS

- Use black ink.
- Complete the boxes above with your name, centre number, candidate number and date of birth.
- Answer **all** the questions.
- Write your answer to each question in the space provided.
- If additional answer space is required, you should use the lined page(s) at the end of this booklet. The question number(s) must be clearly shown.

#### 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 the question marked with an asterisk (\*)
- This document consists of **16** pages.

#### FOR EXAMINER USE ONLY

Question No	Mark
Section A: 1-10	/10
Section B: 11	3
12	4
13	6
14	4
15	4
16	4
17	7
18	7
19	4
20	7
Section C: 21	10
<b>Total</b>	<b>70</b>

**Section A**

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

**1** Which of the following bones form the ankle joint?

(a) Femur, tibia and fibula

(b) Talus, tarsals and metatarsals

(c) Talus, tibia and fibula

(d) Tibia, talus and tarsals

[1]

**2** Which of the following types of bone are the phalanges?

(a) Long

(b) Short

(c) Irregular

(d) Sesamoid

[1]

**3** Which of the following structures surrounds and encloses a synovial joint?

(a) Synovial membrane

(b) Joint capsule

(c) Hyaline cartilage

(d) Bursae

[1]

4 Which of the following is **not** an example of an isometric contraction?

(a) 'Set' position in sprinting

(b) Handstand in gymnastics

(c) 'Take the strain' in tug-of-war

(d) Smash in badminton

[1]

5 Which of the following is a characteristic of fast glycolytic muscle fibres?

(a) Low phosphocreatine stores

(b) Few mitochondria

(c) Many capillaries

(d) High myoglobin stores

[1]

6 'Sporting activities can be placed at different points on this depending on their intensity and duration.'

Which of the following does the statement refer to?

(a) Movement analysis

(b) Energy system

(c) Energy continuum

(d) Recovery process

[1]

7 Which of the following is **not** a long-term effect of regular exercise?

(a) Muscle hypertrophy

(b) Increased capillarisation

(c) Increased blood pressure

(d) Increased stroke volume

[1]

8 Which of the following muscles does **not** assist in the mechanics of breathing?

(a) Scalene

(b) Pectoralis minor

(c) Diaphragm

(d) Adductor brevis

[1]

9 Calculate the breathing frequency of an individual with a tidal volume of 500 ml and a minute ventilation of 6000 ml/minute.

.....[1]

10 Name the component of blood that transports nutrients and hormones.

.....[1]

**Section B**

Answer **all** the questions.

**11** Identify **three** functions of the skeleton, other than shape and movement.

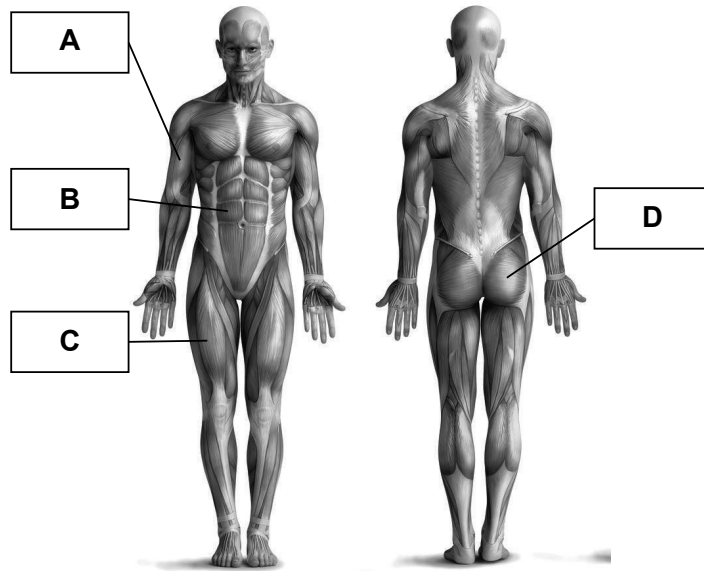
1 .....

2 .....

3 .....

[3]

**12** Fig. 12.1 shows some major muscles in the body.



**Fig. 12.1**

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

A.....

B .....

C .....

D.....

[4]

**13 (a)** Describe **three** structural characteristics of slow oxidative muscle fibres.

1.....  
.....  
2.....  
.....  
3.....  
.....

**[3]**

**(b)** Explain the effects of a cool down on the muscular system.

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

**[3]**



- 15 Complete the table below to identify the structure of the heart which relates to each function.

Structure of heart	Function
.....	Allows blood to pass from the left atrium to the left ventricle but closes to prevent backflow of blood.
.....	Receives de-oxygenated blood from the vena cava
.....	Carries oxygenated blood from the lungs to the heart
.....	Contracts to pump de-oxygenated blood to the lungs

[4]

- 16 Define the terms 'stroke volume' and 'cardiac output'. State typical resting values for each for an untrained individual.

Stroke volume .....

.....

Typical untrained resting value .....

Cardiac output.....

.....

Typical untrained resting value .....

[4]

- 17 The following paragraph describes arterioles. Complete the paragraph by selecting words from the box below.

capillaries	contracts	lumen	venules	large
media	small	relaxes	smooth	

Arterioles are blood vessels with thick walls and a ..... diameter.

The tunica ..... consists of some elastic fibres and relatively large amounts of ..... muscle.

This muscle ..... to reduce the size of the ....., causing vasoconstriction, and then ..... to increase its width, causing vasodilation.

Arterioles subdivide into ....., which are the smallest blood vessels in the body.

[7]



**18 (a)** Describe the roles of the following respiratory structures.

Nasal cavity .....

.....

Epiglottis .....

.....

Alveoli .....

.....

**[3]**

**(b)** Explain the role of the external intercostal muscles during the mechanics of breathing.

.....

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.....

**[4]**

19 (a) State how minute ventilation changes once exercise starts and why this happens.

.....

.....

.....

.....[2]

(b) Explain why minute ventilation is higher during recovery than at rest.

.....

.....

.....

.....[2]

20 (a) Apply your knowledge of the ATP-PC system to complete the table below.

Type of reaction	.....
Chemical or food fuel	.....
Amount of ATP produced	.....
By-products of the reaction (if any)	.....

[4]

(b) Describe the recovery process for the lactic acid system, including the timescale for a full recovery.

.....

.....

.....

.....

.....

.....[3]

**Section C**

**Fig. 21.1** shows different views of the vertebral column.



**Fig. 21.1**

**21\*** Explain the structures and functions of the vertebral column. Your answer should include:

- The different sections of the vertebral column
- Types of joint
- Joint movements with practical examples
- Functions of the vertebral column

**[10]**

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.....



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**END OF QUESTION PAPER**

**ADDITIONAL ANSWER SPACE**

If additional answer space is required, you should use the following lined page(s). The question number(s) must be clearly shown in the margin(s) – for example 16 or 18(b).

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A series of horizontal dotted lines for writing, spanning the width of the page.

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