

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

Plus your additional time allowance.

**You may use:
a calculator**

Modified Enlarged 18 pt

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

Use black ink.

Complete the boxes on the front page 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 (*)

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? [1]

(a) Femur, tibia and fibula

☐

(b) Talus, tarsals and metatarsals

☐

(c) Talus, tibia and fibula

☐

(d) Tibia, talus and tarsals

☐

2 Which of the following types of bone are the phalanges? [1]

(a) Long

☐

(b) Short

☐

(c) Irregular

☐

(d) Sesamoid

☐

3 Which of the following structures surrounds and encloses a synovial joint? [1]

(a) Synovial membrane

☐

(b) Joint capsule

☐

(c) Hyaline cartilage

☐

(d) Bursae

☐

4 Which of the following is NOT an example of an isometric contraction? [1]

(a) 'Set' position in sprinting

☐

(b) Handstand in gymnastics

☐

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

☐

(d) Smash in badminton

☐

5 Which of the following is a characteristic of fast glycolytic muscle fibres? [1]

(a) Low phosphocreatine stores

☐

(b) Few mitochondria

☐

(c) Many capillaries

☐

(d) High myoglobin stores

☐

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? [1]

(a) Movement analysis

☐

(b) Energy system

☐

(c) Energy continuum

☐

(d) Recovery process

☐

7 Which of the following is NOT a long-term effect of regular exercise? [1]

(a) Muscle hypertrophy

☐

(b) Increased capillarisation

☐

(c) Increased blood pressure

☐

(d) Increased stroke volume

☐

8 Which of the following muscles does NOT assist in the mechanics of breathing? [1]

(a) Scalene

☐

(b) Pectoralis minor

☐

(c) Diaphragm

☐

(d) Adductor brevis

☐

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

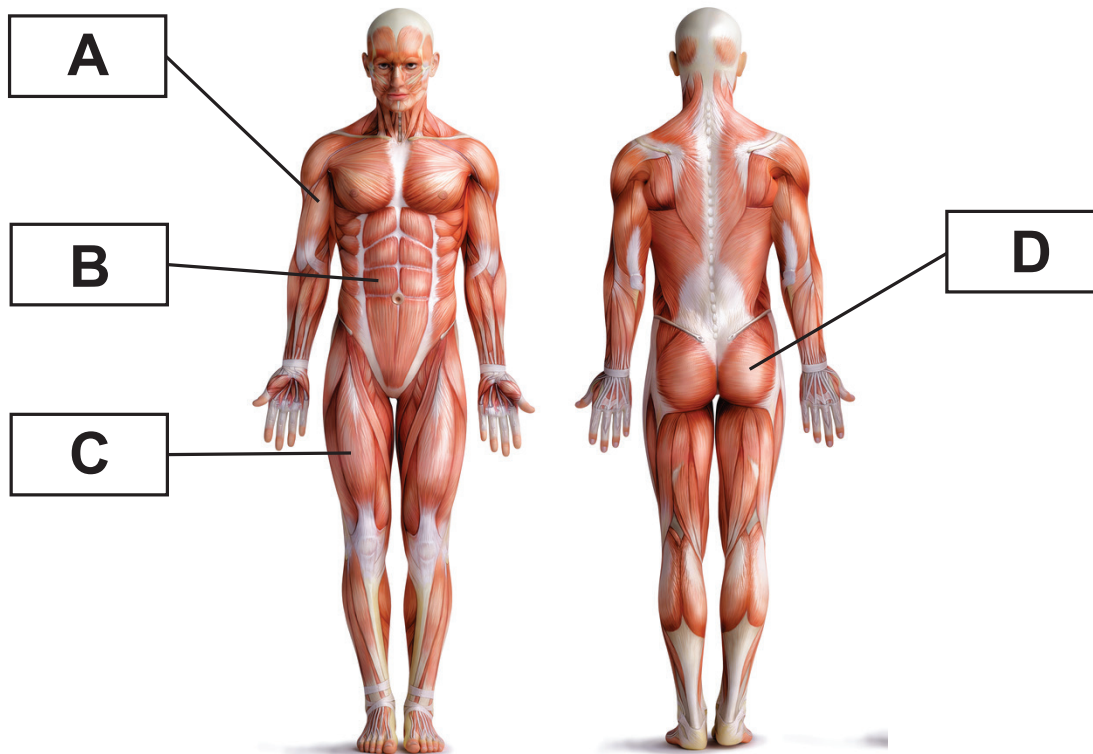
Answer ALL the questions.

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]

14 Fig. 14.1 shows a table tennis player performing a shot with top spin.

Fig. 14.1



Explain how the muscles acting at the radio-ulnar joint work together to move the forearm into the position shown in the picture in order to produce top spin on the ball.

15 Complete the table below to identify the structure of the heart which relates to each function. [4]

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

16 Define the terms ‘stroke volume’ and ‘cardiac output’. State typical resting values for each for an untrained individual. [4]

Stroke volume _____

Typical untrained resting value _____

Cardiac output _____

Typical untrained resting value _____

- 17 The following paragraph describes arterioles. Complete the paragraph by selecting words from the list below. [7]

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.

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.

[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. [4]

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

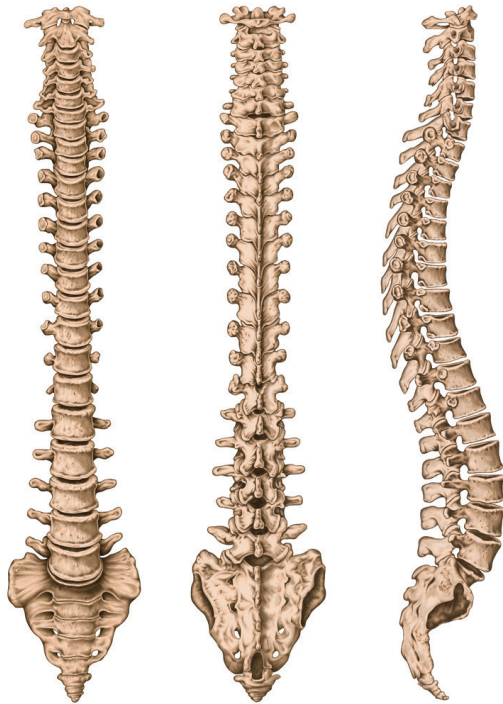
(b) Describe the recovery process for the lactic acid system, including the timescale for a full recovery.

[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]

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).

[illegible]



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