

Level 3 Cambridge Technical in Sport and Physical Activity

05826/05827/05828/05829/05872

Unit 1: Body systems and the effects of physical activity

Tuesday 15 May 2018 – Afternoon

Duration: 1 hour 30 minutes
C400/1806

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.

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Question No	Mark
Section A: 1-10	/10
Section B: 11	/8
12	/4
13	/2
14	/10
15	/3
16	/7
17	/4
18	/3
19	/3
20	/6
Section C: 21	/10
Total	/70

Section A

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

1 Which one of the following muscles contracts to cause flexion of the spine?

(a) Erector spinae

☐

(b) Gluteus maximus

☐

(c) Rectus abdominus

☐

(d) Teres major

☐

[1]

2 Which one of the following is the correct term for the volume of blood ejected from the left ventricle per beat?

(a) Tidal volume

☐

(b) Stroke volume

☐

(c) Stroke output

☐

(d) Cardiac output

☐

[1]

3 Which of the following bones meet to form the wrist joint?

(a) Carpals, radius and scapula

☐

(b) Carpals, sacrum and ulna

☐

(c) Carpals, radius and ulna

☐

(d) Carpals, metacarpals and radius

☐

[1]

4 Which one of the following bones is **not** part of the appendicular skeleton?

(a) Sacrum

☐

(b) Scapula

☐

(c) Phalanges

☐

(d) Clavicle

☐

[1]

5 Which one of the following respiratory structures is also known as the voice-box?

(a) Epiglottis

☐

(b) Pharynx

☐

(c) Larynx

☐

(d) Nasal cavity

☐

[1]

6 Which one of the following fuels is **not** used in the aerobic system?

(a) Fats

☐

(b) Glycogen

☐

(c) Phosphocreatine

☐

(d) Glucose

☐

[1]

- 7** Which one of the following is the amount of time it takes for glycogen stores to recover fully after a marathon?

(a) 1 hour

☐

(b) 6 hours

☐

(c) 12 hours

☐

(d) 48 hours

☐

[1]

- 8** Which one of the following describes supination at a joint?

(a) Pointing the toes during a handstand

☐

(b) Pulling your toes up to kick a ball with the side of your foot

☐

(c) Turning the palms of the hand up during a biceps curl

☐

(d) Placing the palms downwards on the floor during a press up

☐

[1]

- 9** Calculate the minute ventilation of an individual with a tidal volume of 0.5 litres and a breathing frequency of 12 breaths per minute.

.....[1]

- 10** One function of the vertebral column is protection. What is being protected by the vertebral column?

.....[1]

Section B

Answer **all** the questions.

11 Fig. 11 shows a diagram of the skeleton.

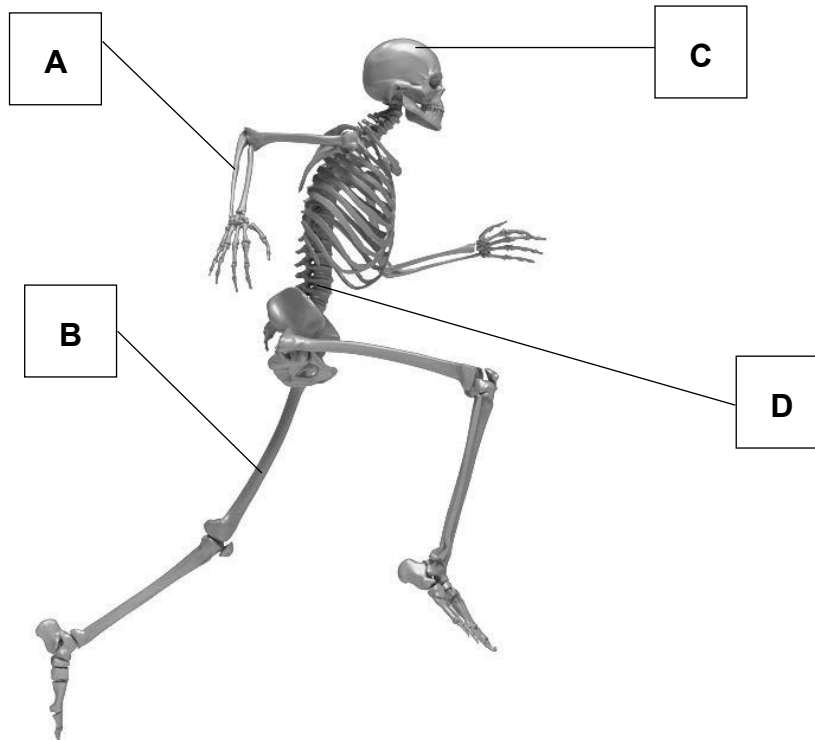


Fig. 11

(a) Identify the bones labelled A, B, C and D.

- A
- B
- C
- D

[4]

(b) State the type of bone and identify **one** function of each of B and D.

- B
-
- D
-

[4]

12 Fig. 12 shows the performance of one part of a tennis serve.



Fig. 12

Apply your knowledge of the skeletal and muscular systems to analyse the movement of the racquet arm during this part of the serve and complete the following table:

Joint	Joint movement	Muscle acting
Wrist	Extension	
Elbow		
Shoulder		(posterior) deltoid

[4]

13 Describe the function of articular cartilage and synovial fluid in a synovial joint.

.....

.....

.....

.....**[2]**

14 Fig. 14 shows the performance of a squat.



Fig. 14

- (a) Identify **one** agonist and **one** antagonist at the hip and knee during the upward phase of the squat.

Hip Agonist

Hip Antagonist

Knee Agonist

Knee Antagonist

[4]

- (b) Explain the role of fixator muscles during the squat.

.....

 [2]

- (c) Define the terms 'eccentric contraction' and 'isometric contraction' and give a practical example of each.

Eccentric contraction

.....

Isometric contraction

.....

[4]

15 Outline **three** structural characteristics of fast glycolytic muscle fibres.

.....

.....

.....

.....

.....

.....[3]

16 (a) The paragraph below describes blood flow as it leaves the right ventricle, as part of the cardiovascular system.

Complete the paragraph by filling in the missing structures of the circuit.

Blood is pumped out of the right ventricle into the.....

Blood then travels through arterioles to the capillary network of the.....

Blood returns to the heart through venules, veins and finally the.....

From this blood vessel it enters theof the heart.

[4]

(b) Explain why the resting heart rate of an untrained individual is usually higher than that of a trained athlete.

.....

.....

.....

.....

.....

.....

.....

.....[3]

- 17** Complete the table below to show the components and functions of blood.

Component	Function
.....	Transport oxygen
Platelets
White blood cells
.....	Fluid that transports nutrients and blood cells

[4]

- 18** The following paragraph describes the effects of a cool down on the cardiovascular system.

Complete the paragraph using appropriate words from those provided in the box below.

constricted	oxygen	carbon dioxide	oxygenated
pooling	dilated	de-oxygenated	haemoglobin

A cool down keeps the blood vessels, flushing the muscles withblood to remove that has built up in the muscles.

[3]

19 Fig. 19 shows a diagram of the lungs.

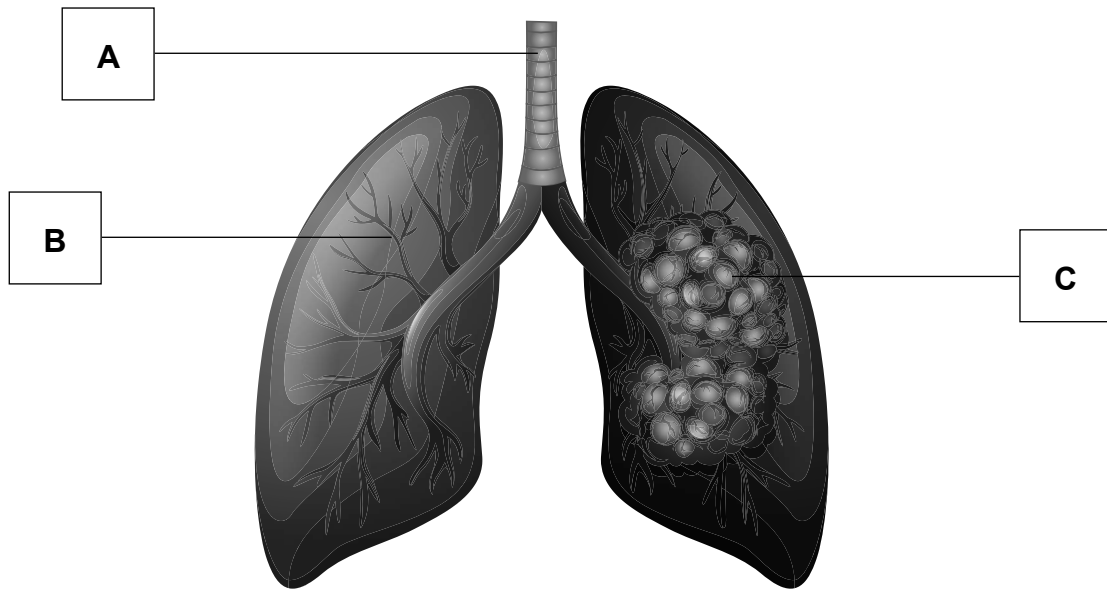


Fig. 19

Identify the structures labelled A, B and C.

A.....
 B.....
 C

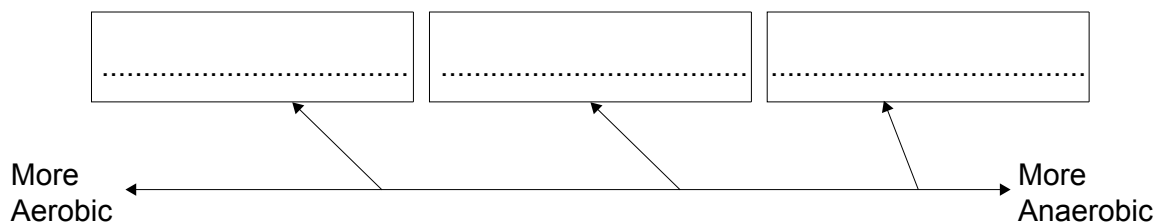
[3]

20 (a) Complete the table below to identify the energy system, the fuel used and the by-product of the reaction.

Energy system	Type of reaction	Chemical or food fuel	Amount of ATP produced	By-product
.....	Anaerobic	2 ATP

[3]

(b) Show your knowledge of energy systems by placing the following athletics events in the correct order on the continuum below.



- A Javelin
 B 1500 m race
 C Triple Jump

[3]

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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 11(a) or 14(a).

[illegible]



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