

## Thursday 9 January 2020 – 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

**Time allowed: 1 hour 30 minutes**  
**C400/2001**



**You can use:**

- a calculator

Please write clearly in black ink.

Centre number

--	--	--	--	--

Candidate number

--	--	--	--

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.
- Answer **all** the questions.
- 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.
- 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.

### FOR EXAMINER USE ONLY

Question No	Mark
Section A: 1-10	/10
Section B: 11	/8
12	/5
13	/3
14	/6
15	/8
16	/4
17	/6
18	/3
19	/3
20	/4
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 one of the following is the correct definition for minute ventilation?

(a) The volume of oxygen inspired per minute

(b) The volume of oxygen inspired per breath

(c) The volume of air inspired per minute

(d) The volume of air inspired per breath

[1]

**2** Which one of the following heart valves prevents blood flowing back into the left atrium?

(a) Bicuspid valve

(b) Tricuspid valve

(c) Pulmonary valve

(d) Aortic valve

[1]

**3** Which one of the following muscles contracts to cause plantar flexion at the ankle?

(a) Rectus femoris

(b) Tibialis anterior

(c) Soleus

(d) Semitendinosus

[1]

4 Which one of the following is an effect of a cool down on the respiratory system?

(a) Prevents blood pooling in muscles

(b) Quicker removal of lactic acid

(c) Increases residual volume in the lungs

(d) Maintains elevated ventilation rate

[1]

5 Which one of the following describes the function of white blood cells?

(a) Aids clotting

(b) Transports nutrients and hormones

(c) Fights infections

(d) Transports oxygen

[1]

6 Which one of the following movements is an example of horizontal adduction?

(a) Preparing to serve in tennis

(b) Throwing a discus

(c) Performing a sit up

(d) Turning the head to look for a team mate to pass to

[1]

7 Which one of the following activities is most reliant on the lactic acid energy system?

(a) 200m breaststroke swimming race

(b) Tennis match

(c) Spin bowling in cricket

(d) Triple jump in athletics

[1]

8 Which one of the following processes is part of the alactic recovery system?

(a) Replenishment of glycogen stores

(b) Removal of lactic acid

(c) Restoration of pyruvate stores

(d) Restoration of phosphocreatine stores

[1]

9 State the typical value of the stroke volume of an untrained individual at rest.

.....[1]

10 Differences in the partial pressures of oxygen and carbon dioxide at the lungs allow what process to take place?

.....[1]

**Section B**

Answer **all** the questions.

- 11 (a) Complete the table below to identify the types of bone described.

Description	Type of bone
These bones are found in tendons, and assist with movement at a joint.	.....
These bones act as levers and are essential for movement.	.....
These bones protect internal organs and provide attachments for muscles.	.....
These bones are compact and designed for strength and weight-bearing.	.....

[4]

- (b) The paragraph below describes slightly movable joints. Complete the paragraph by filling in the missing words.

Bones are joined by tough, fibrous discs of .....

This helps with stability as well as acting as a ..... absorber.

A small amount of movement occurs at these joints.

They are also known as ..... joints.

An example of a slightly movable joint can be found between the

.....

[4]

12 Fig. 12 shows a typical synovial joint.

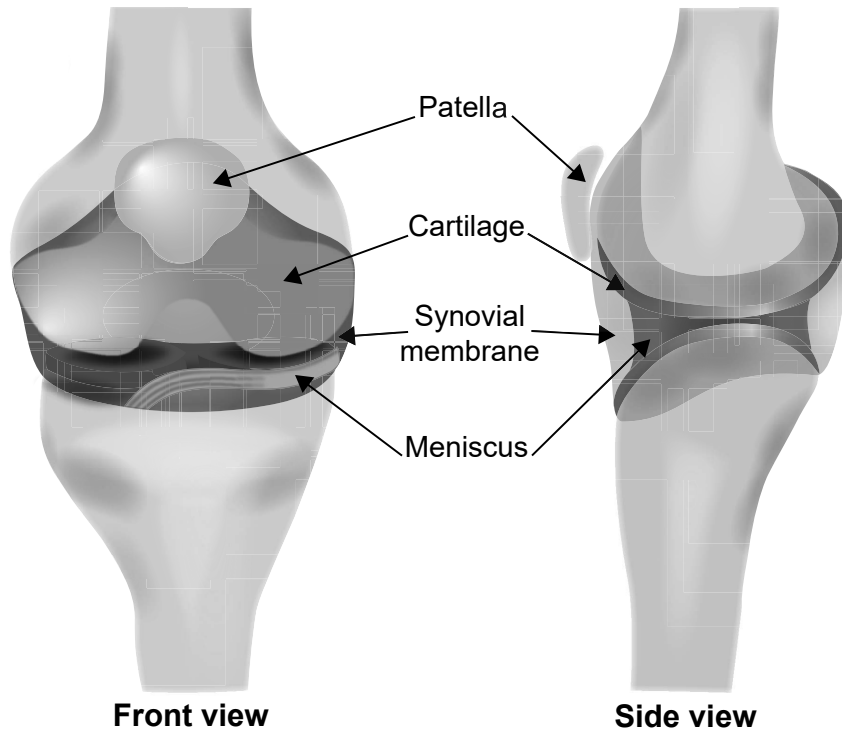


Fig. 12

(a) Draw **one** ligament on **Fig. 12** in its correct position. [1]

(b) Describe the function of the synovial membrane.

.....[1]

(c) Explain the structure and functions of the meniscus.

.....  
.....  
.....  
.....  
.....  
.....  
.....[3]

**13** Describe **three** long-term benefits of regular exercise on the skeletal system.

1.....

.....

2.....

.....

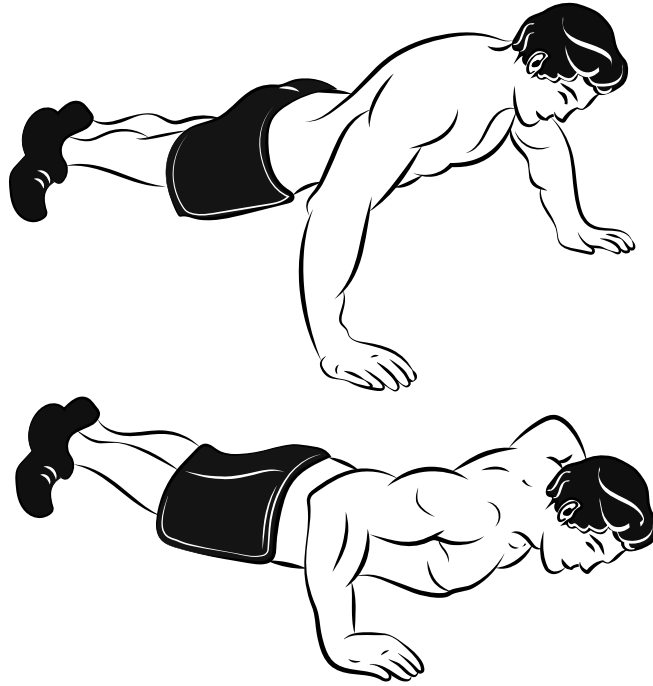
3.....

.....

**[3]**

**Turn over for the next question**

**14** Fig. 14 shows the performance of a press up.



**Fig. 14**

**(a)** Explain how the biceps brachii and triceps brachii work together as an antagonistic pair during **one** complete press up.

.....

.....

.....

.....

.....

.....

.....

.....[4]

**(b)** Name **one** fixator muscle that stabilises the vertebral column during the press up, and identify the type of muscle contraction it produces.

Fixator.....

Type of muscle contraction.....

[2]



15 Fig. 15 shows a picture of an artery and a vein.

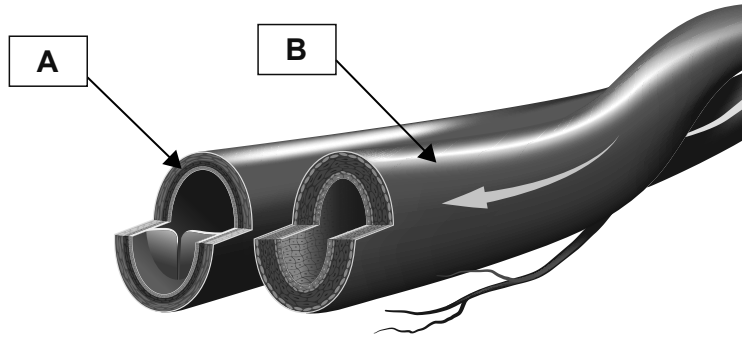


Fig. 15

(a) Identify which of blood vessels **A** or **B** is the vein.

.....[1]

(b) Describe **one** structural characteristic of each of the following blood vessels.

Artery .....

.....

Capillary.....

.....

Vein.....

.....

[3]

(c) Explain the specific roles of the pulmonary artery and pulmonary vein in the transport of blood.

Pulmonary artery .....

.....

.....

.....

Pulmonary vein.....

.....

.....

.....

[4]

16 Fig. 16 is a graph showing how heart rate responds to sub-maximal exercise.

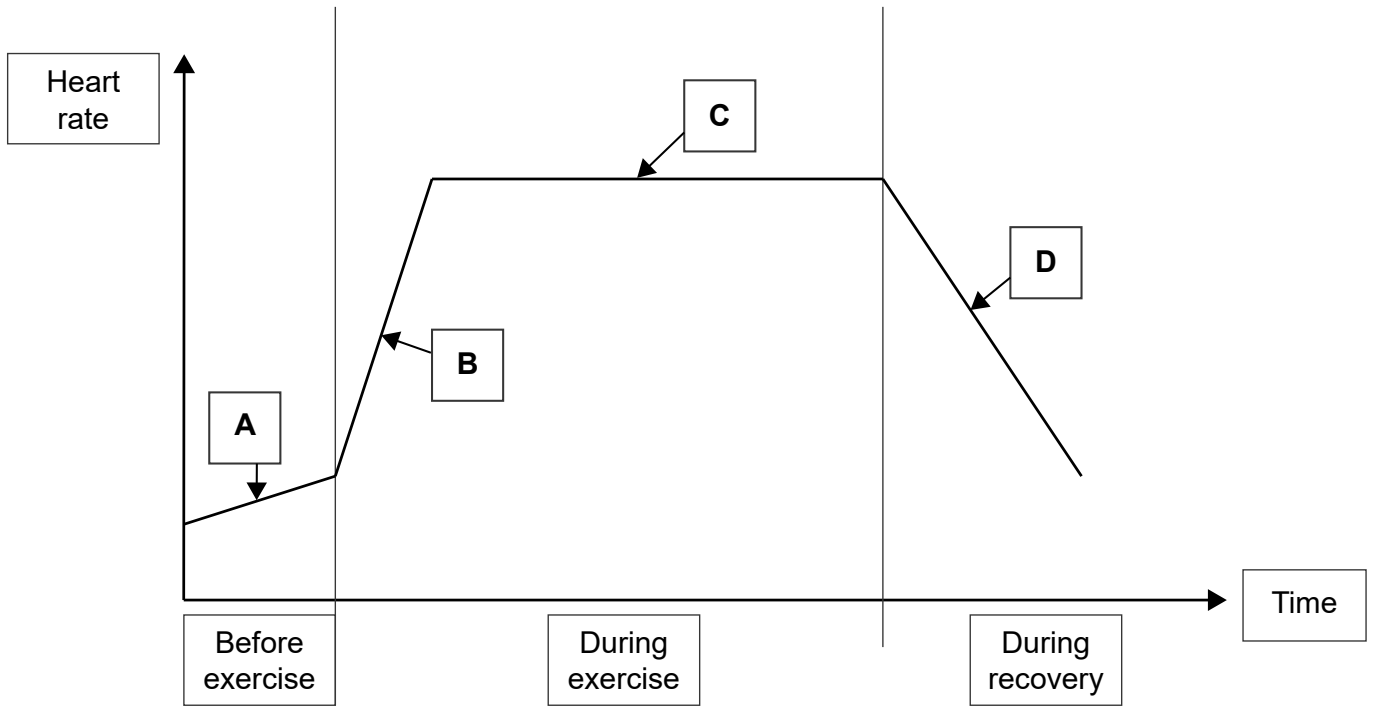


Fig. 16

Explain the changes in heart rate at A, B, C and D.

- A.....
- .....
- B.....
- .....
- C.....
- .....
- D.....
- .....

[4]

17 Fig. 17 shows a diagram of the respiratory system.

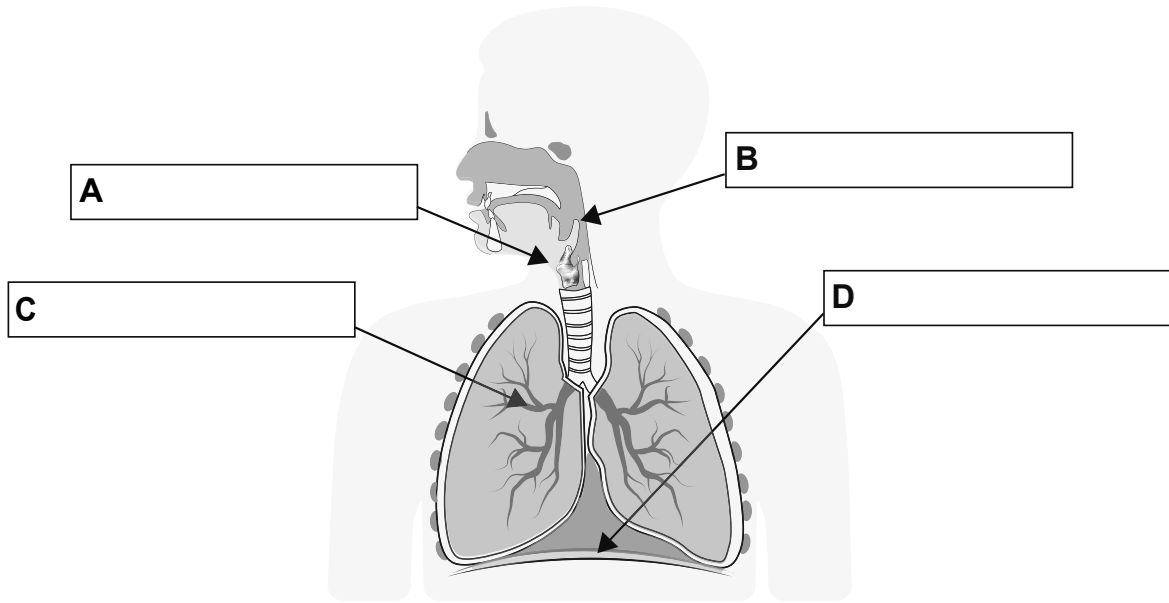


Fig. 17

(a) Label structures A - D in the boxes provided above. [4]

(b) Describe the structure and function of the trachea.

Structure .....

.....

Function .....

.....

.....

[2]

18 Explain how the sternocleidomastoid muscle assists respiration during exercise.

.....

.....

.....

.....

.....

.....

[3]

**19** Describe **three** short-term effects of exercise on the respiratory system.

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

**[3]**

**20** Complete the table below by stating whether each statement is true or false.

Statement	True or False
The lactic acid system is an aerobic reaction.	.....
Carbohydrates and fats fuel the aerobic system.	.....
The energy continuum can show how aerobic or anaerobic an activity is.	.....
The ATP-PC system requires an hour for full recovery.	.....

**[4]**



A series of horizontal dotted lines for writing.

**END OF QUESTION PAPER**

**ADDITIONAL ANSWER SPACE**

If additional answer space is required, you should use the following lined pages. The question numbers must be clearly shown in the margins – for example, 12(c) or 21.

A vertical line on the left side of the page is followed by 25 horizontal dotted lines, providing a ruled area for writing answers.



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