

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 plus your additional time allowance

**You can use:
a calculator**

Modified Enlarged 18 pt

Please write clearly in black ink.

**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.

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 (*).

ADVICE

Read each question carefully before you start your answer.

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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? [1]

- (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 ☐

2 Which one of the following heart valves prevents blood flowing back into the left atrium? [1]

- (a) Bicuspid valve ☐
- (b) Tricuspid valve ☐
- (c) Pulmonary valve ☐
- (d) Aortic valve ☐

3 Which one of the following muscles contracts to cause plantar flexion at the ankle? [1]

(a) Rectus femoris

☐

(b) Tibialis anterior

☐

(c) Soleus

☐

(d) Semitendinosus

☐

4 Which one of the following is an effect of a cool down on the respiratory system? [1]

(a) Prevents blood pooling in muscles

☐

(b) Quicker removal of lactic acid

☐

(c) Increases residual volume in the lungs

☐

(d) Maintains elevated ventilation rate

☐

5 Which one of the following describes the function of white blood cells? [1]

(a) Aids clotting

☐

(b) Transports nutrients and hormones

☐

(c) Fights infections

☐

(d) Transports oxygen

☐

6 Which one of the following movements is an example of horizontal adduction? [1]

(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

☐

7 Which one of the following activities is most reliant on the lactic acid energy system? [1]

(a) 200m breaststroke swimming race

☐

(b) Tennis match

☐

(c) Spin bowling in cricket

☐

(d) Triple jump in athletics

☐

8 Which one of the following processes is part of the alactic recovery system? [1]

(a) Replenishment of glycogen stores

☐

(b) Removal of lactic acid

☐

(c) Restoration of pyruvate stores

☐

(d) Restoration of phosphocreatine stores

☐

- 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. [4]

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.	

(b) The paragraph below describes slightly movable joints.

Complete the paragraph by filling in the missing words. [4]

Bones are joined by tough, fibrous discs of

_____.

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

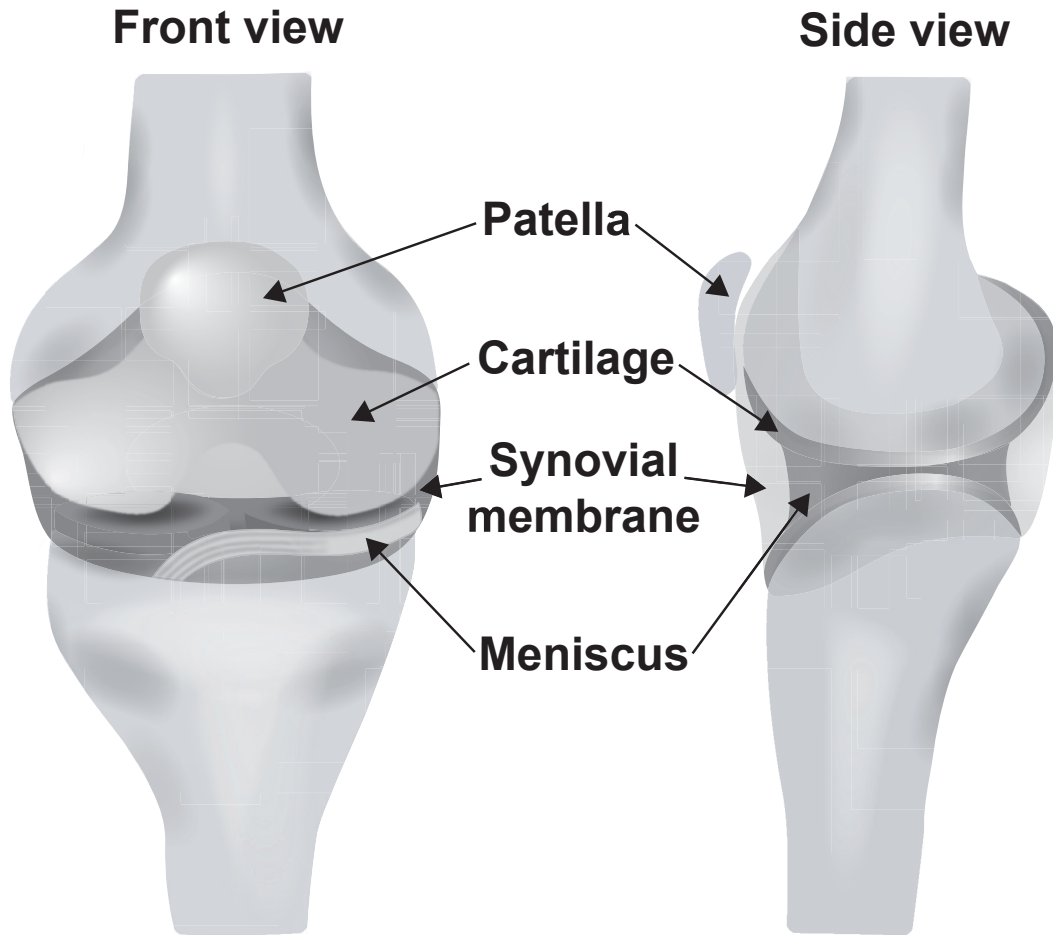
A small amount of movement occurs at these joints.

They are also known as _____ joints.

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

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

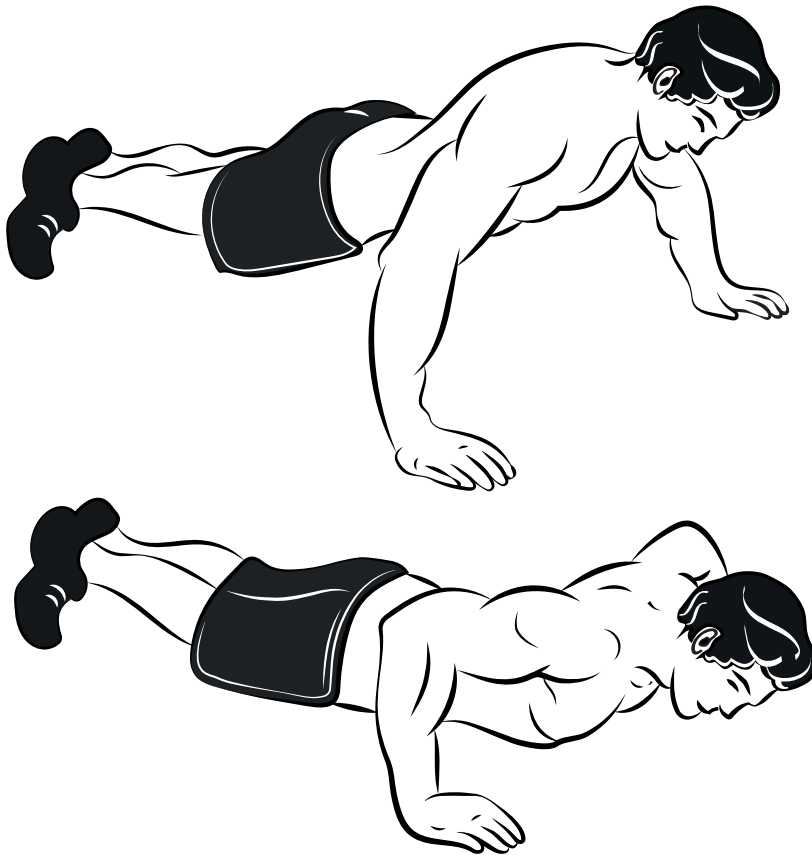
2

3

[3]

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.

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

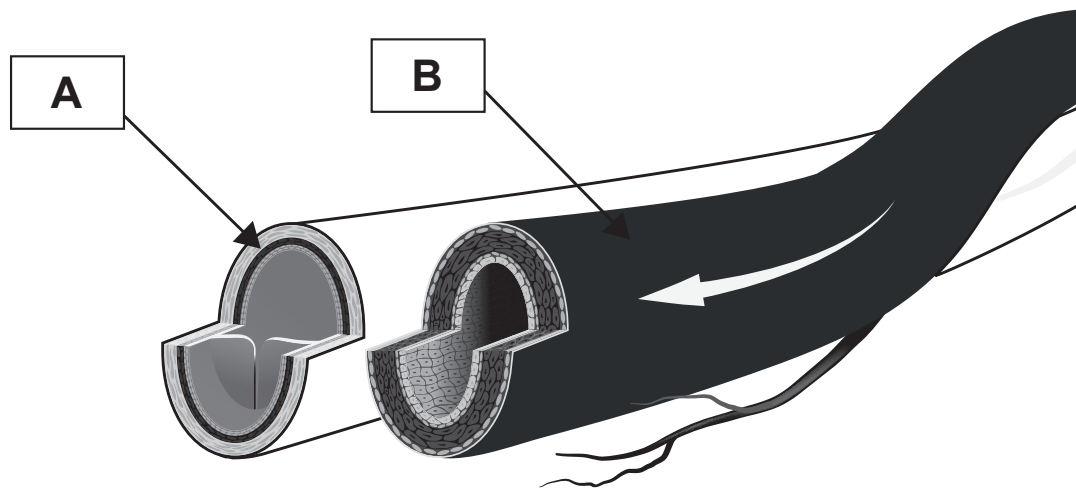
Fixator _____

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

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

A _____

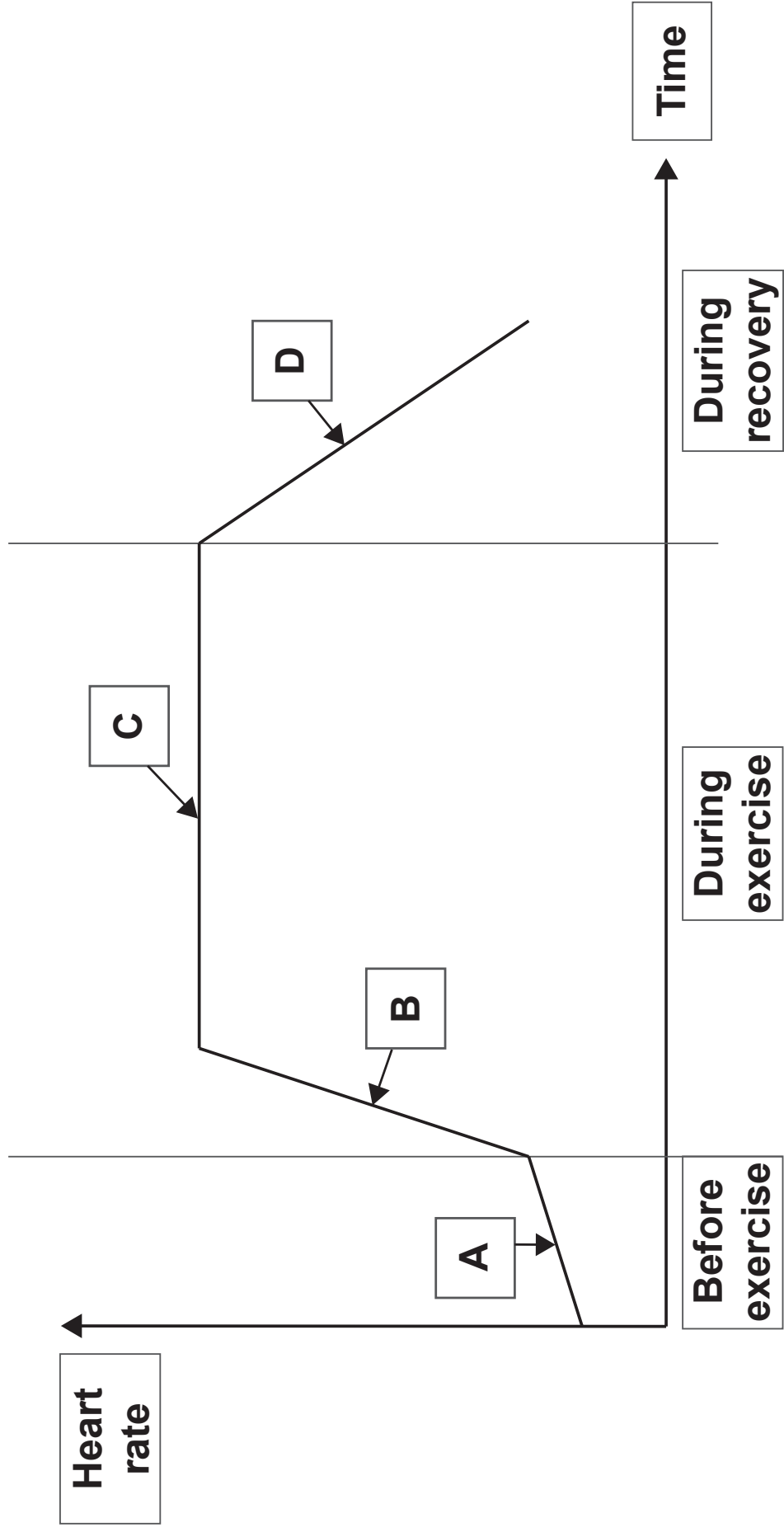
B _____

C _____

D _____

[4]

Fig. 16



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

(a) Label structures A - D in the boxes provided on page 19. [4]

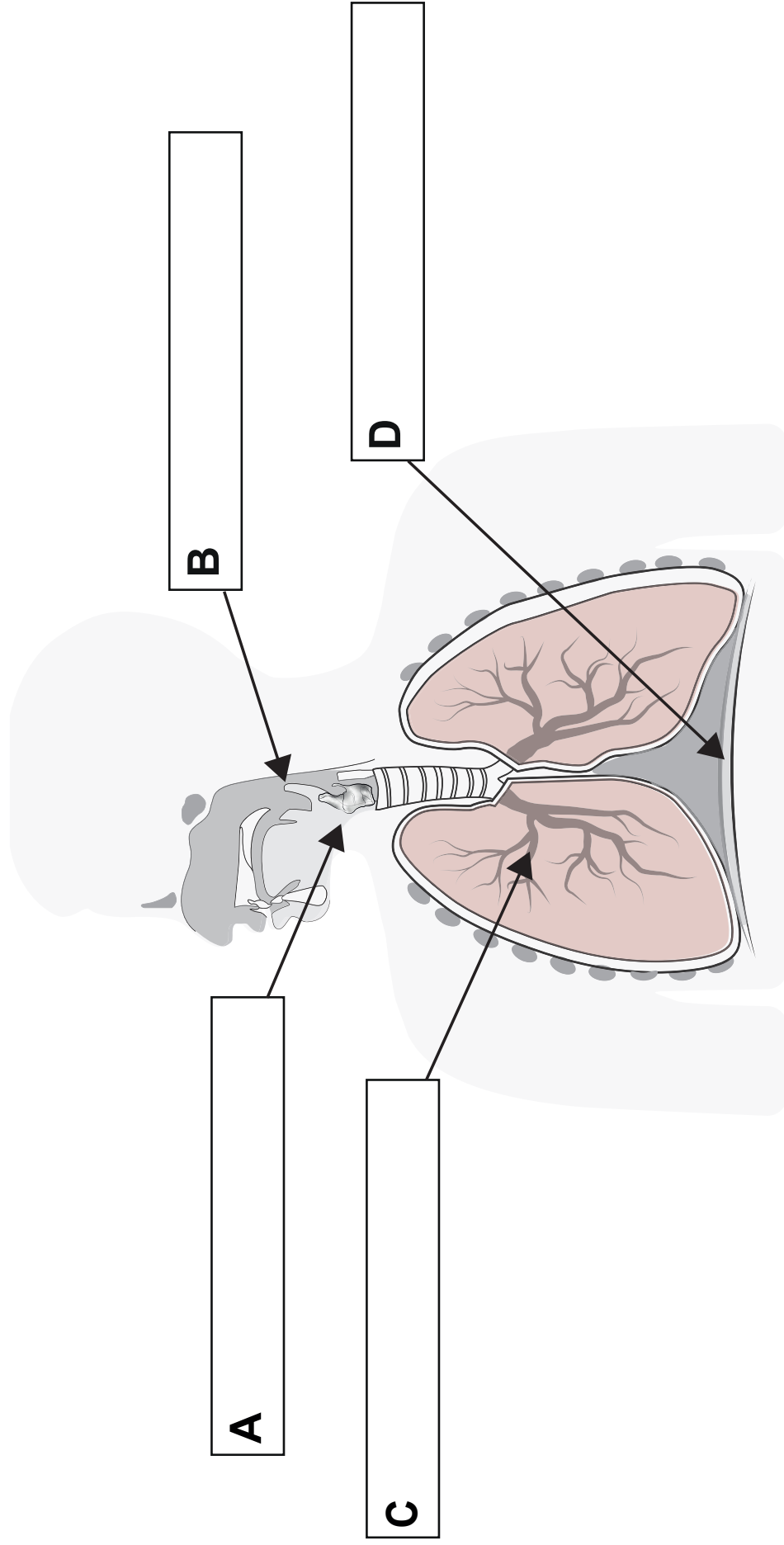
(b) Describe the structure and function of the trachea.

Structure _____

Function _____

[2]

Fig. 17



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. [4]

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.	

SECTION C

21* Describe the structures and functions of the THREE different muscle fibre types.

Explain how the mix of muscle fibre types a person has affects their performance in different physical activities. [10]

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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.

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