



Oxford Cambridge and RSA

Monday 23 May 2022 – Afternoon

Level 3 Cambridge Technical in Health and Social Care

05831/05832/05833/05871 Unit 4: Anatomy and physiology for health and social care

Time allowed: 2 hours
C442/2206



No extra materials are needed.



Please write clearly in black ink.

Centre number

Candidate number

First name(s) _____

Last name _____

Date of birth

INSTRUCTIONS

- Use black ink.
- 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.
- Answer **all** the questions.

INFORMATION

- The total mark for this paper is **100**.
- The marks for each question are shown in brackets [].
- Quality of extended response will be assessed in questions marked with an asterisk (*).
- This document has **20** pages.

ADVICE

- Read each question carefully before you start your answer.

FOR EXAMINER USE ONLY	
Question No	Mark
1	/18
2	/27
3	/12
4	/30
5	/13
Total	/100

Answer **all** the questions.

1 The ear is part of the sensory system.

(a) Choose from the list of structures below to complete the table about the ear.

Eustachian tube	inner ear	middle ear
organ of Corti	round window	stapes

You may use each structure once, more than once, or not at all.

Description	Structure
A small bone that transmits sound vibrations within the ear.	
Found in the cochlea and contains rows of hair cells.	
Opening covered by a membrane that allows movement of fluid in the cochlea.	
Separated from the external ear by the ear drum.	

[4]

(b) Impulses from the sensory organs are carried to the brain by nerves.

(i) Name the nerve that carries impulses from the **ear** to the brain.

..... [1]

(ii) Name the nerve that carries impulses from the **eye** to the brain.

..... [1]

- (c) The structure of nerve cells (or neurons) is adapted for their function of carrying impulses.

Match each structure with its description by drawing a line between the boxes.

One line has been completed for you.

Structure	Description
axon	A gap between Schwann cells that helps to speed up the nerve impulse.
cell body	Long, thin part of the neuron that conducts the impulse along.
dendron	Part of the neuron that consists of Schwann cells forming an insulating layer.
myelin sheath	Part of the neuron that contains the nucleus.
node of Ranvier	Short, branched part of the neuron that receives impulses from other neurons.

[4]

- (d) Kai has glaucoma, a malfunction of the eye.

- (i) Which **one** of the following is a possible cause of glaucoma?

Put a tick (✓) in the box next to the possible cause.

Possible cause of glaucoma	Tick (✓) one only
Ageing.	
Air pollution.	
Alcohol misuse.	
Exposure to ultra-violet (UV) light.	

[1]

- (ii) Glaucoma is caused by a build-up of pressure inside the eye.

Give **one** reason why pressure could build up inside the eye.

.....
 [1]

2 Fig. 1 is a diagram of the heart which is part of the cardiovascular system.

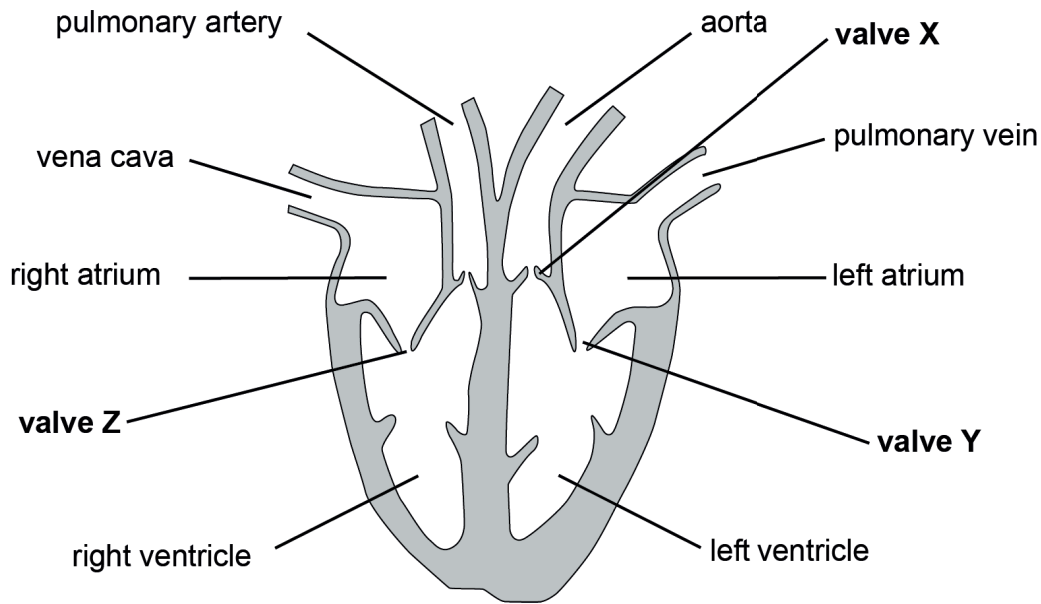


Fig. 1

(a) (i) Which of the valves X, Y or Z on the diagram of the heart is a semi-lunar valve?

..... [1]

(ii) Choose from the components of the heart labelled on Fig. 1 to complete the table about their role in heart function.

You may use each component once, more than once, or not at all.

One has been done for you.

Role in heart function	Component
A blood vessel that carries deoxygenated blood from the body back to the heart.	vena cava
A blood vessel that carries oxygenated blood from the lungs back to the heart.	
A blood vessel that carries oxygenated blood out of the heart to the body.	
A chamber that forces blood out of the heart towards the lungs.	
A chamber that receives deoxygenated blood returning from the body.	

[4]

(b) Coronary arteries supply the heart muscle with blood containing absorbed nutrients. Complete the passage by choosing the most appropriate word(s) from the list below.

- | | | | |
|------------|-----------------------|------------------|--------------------|
| ADP | aerobic | anaerobic | |
| ATP | carbon dioxide | glucose | lactic acid |

Absorbed nutrients, such as , are needed to supply energy for the contraction of heart muscle. Energy is supplied in the form of which is produced during cellular respiration in the muscle cells. When plenty of oxygen is available respiration takes place inside mitochondria which release as a waste product.

[4]

(c) Anika has been admitted to hospital after suffering a suspected heart attack.

(i) Give **two** symptoms that suggest a person has either suffered a heart attack or has angina.

- 1
- 2

[2]

(ii)* Anika has been told that she has coronary heart disease (CHD) and that one of her coronary arteries is blocked.

Explain the possible causes and risk factors that could lead to a blocked coronary artery.

[6]

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(d) Blockages in the arteries leading to the brain can prevent flow of blood containing nutrients and oxygen causing a stroke.

(i) Outline **one** other biological cause of a stroke.

.....

.....

.....

..... [2]

(ii) Give **two** lifestyle changes that could lower the chances of having a stroke.

1

.....

2

.....

[2]

3 Bronchi are part of the respiratory system that supplies the oxygen required for cellular respiration.

Fig. 2 shows a normal bronchus and a bronchus during an asthma attack.

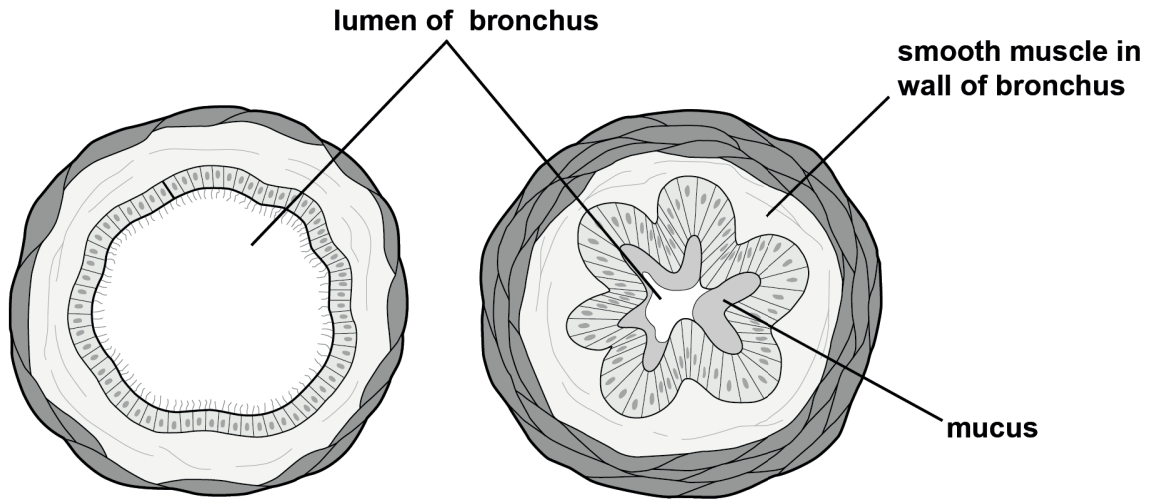


Fig. 2

(a) Use Fig. 2 to give four reasons why asthma sufferers become breathless, start wheezing and feel tightness in the chest during an asthma attack.

- 1
- 2
- 3
- 4

[4]

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PLEASE DO NOT WRITE ON THIS PAGE

Turn over for the next question

4 (a) Fig. 3 shows part of the digestive system.

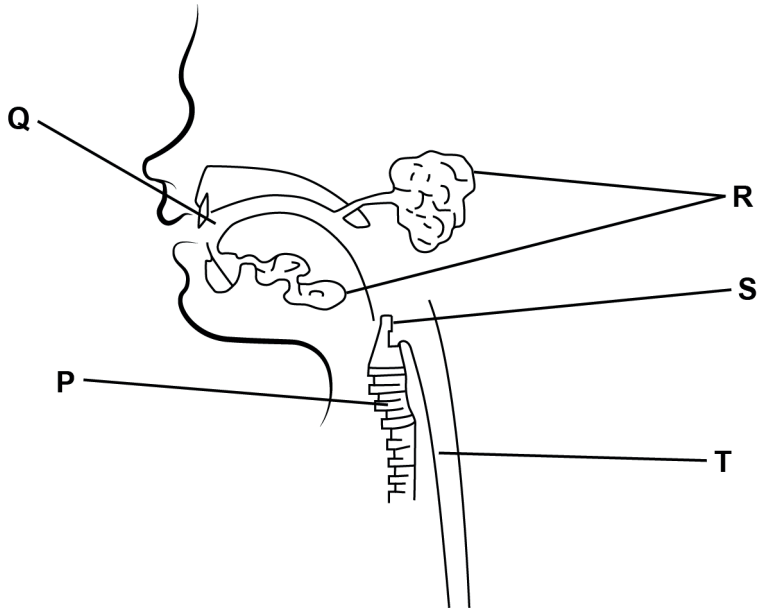


Fig. 3

(i) Complete the table below by choosing the correct letter from Fig. 3 that identifies the structures of this part of the digestive system.

One row has been done for you.

Structure	Letter
buccal cavity	
epiglottis	S
oesophagus	
salivary glands	

[3]

(ii) Describe the structure and function of the epiglottis labelled S on Fig. 3.

.....

.....

.....

..... [2]

(b) Outline the role of the part of the digestive system shown in **Fig. 3** in the breakdown of food.

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

(c) Irritable bowel syndrome (IBS) is a digestive malfunction that may occur when food moves through the digestive system too quickly.

(i) State **one** symptom of IBS.

.....
..... [1]

(ii) State **one** cause of IBS.

.....
..... [1]

(iii) State **one** treatment or lifestyle change for managing IBS.

.....
..... [1]

.....

.....

.....

.....

.....

.....

(e) The kidney is also a component of the regulatory system.

Complete the table below by deciding whether each statement about the structure and functions of the kidney is **True (T)** or **False (F)**.

Statement	True (T) or False (F)
Collecting ducts of kidney nephrons have a role in osmoregulation.
Ultrafiltration takes place in the Bowman’s capsule of kidney nephrons.
Urea is reabsorbed back into the blood as it passes through kidney nephrons.
Ureters carry urine from the kidneys to the bladder.

[4]

5 Joints occur where two bones meet and allow movement between the bones.

(a) Name the type of joint that allows the skull to move on the spinal column.

..... [1]

(b) Choose from the list below to answer the following questions about the components of a synovial joint.

You can use each component once, more than once, or not at all.

cartilage

ligament

muscle

synovial capsule

synovial fluid

tendon

(i) State the component that contracts and relaxes to move the bones.

..... [1]

(ii) State the component that lubricates and nourishes the joint.

..... [1]

(iii) State the component that can act as a shock absorber.

..... [1]

(iv) State the component that is a type of fibrous tissue that pulls on the bone to move the joint.

..... [1]

ADDITIONAL ANSWER SPACE

If additional answer space is required, you should use the following lined pages. The question numbers must be clearly shown – for example, 1(d) or 6(b).

A large rectangular area containing 25 horizontal dotted lines for writing answers. A solid vertical line is on the left side of the area.

