

Cambridge International AS & A Level

# BIOLOGY (9700) P1

TOPIC WISE QUESTIONS + ANSWERS | COMPLETE SYLLABUS



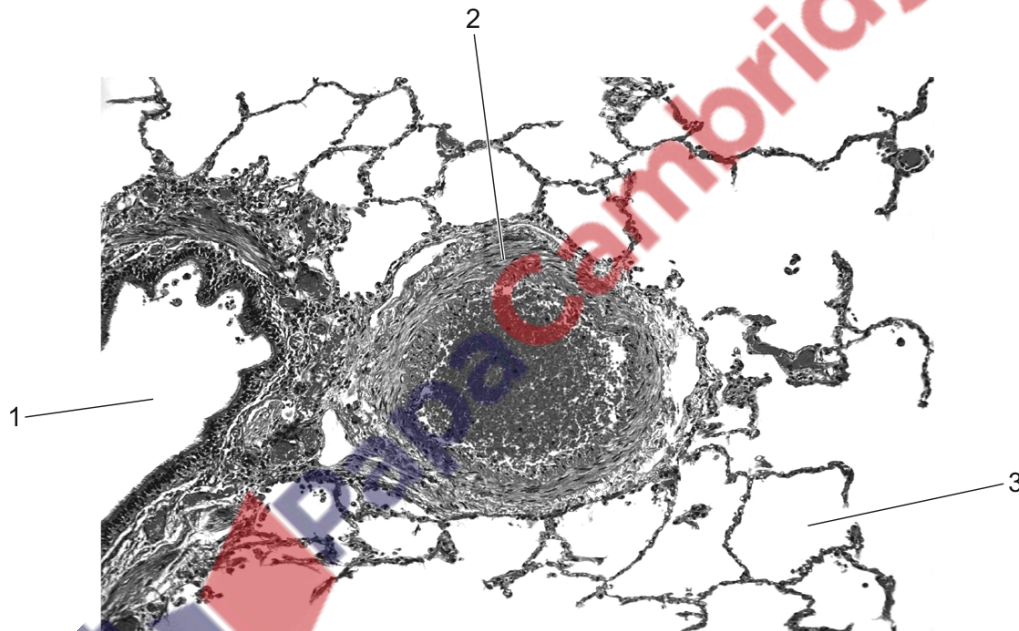
## Chapter 9

# Gas exchange and smoking

### 9.1 The gas exchange system

1282. 9700\_m20\_qp\_12 Q: 33

The photomicrograph shows part of the lung as seen using a light microscope.



Which row correctly identifies the features labelled 1, 2 and 3?

	1	2	3
<b>A</b>	alveolus	capillary	bronchiole
<b>B</b>	alveolus	bronchiole	capillary
<b>C</b>	bronchiole	small artery	alveolus
<b>D</b>	small artery	bronchiole	alveolus

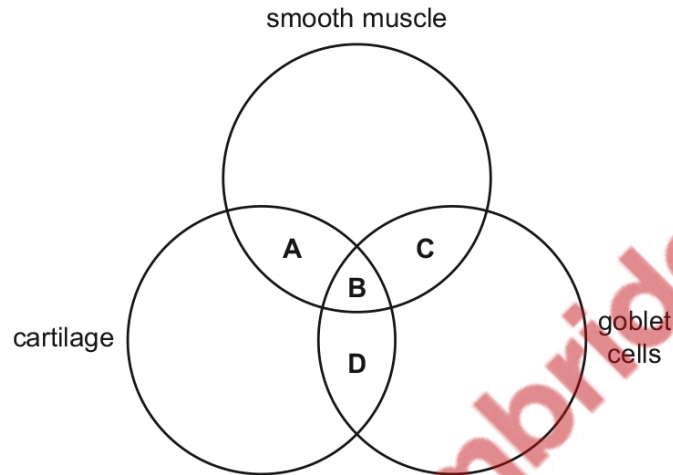
1283. 9700\_m20\_qp\_12 Q: 34

How many times must a molecule of oxygen pass through a cell surface membrane as it diffuses from inside an alveolus, through a cell in the capillary wall, to bind to a molecule of haemoglobin?

- A** 3                      **B** 4                      **C** 5                      **D** 10

1284. 9700\_s20\_qp\_11 Q: 33

Which structures are found in bronchi?



1285. 9700\_s20\_qp\_11 Q: 34

Which tissue in the respiratory system is correctly linked to its function?

	tissue	function
<b>A</b>	cartilage	stretch and recoil to force air out
<b>B</b>	ciliated epithelium	gives protection from suspended particles in the air
<b>C</b>	elastic fibres	contract and relax to adjust diameter of bronchioles
<b>D</b>	smooth muscle	keeps trachea and bronchi open

1286. 9700\_s20\_qp\_12 Q: 32

Which structures of the human gas exchange system are supported by cartilage?

	bronchus	bronchiole	trachea
<b>A</b>	x	✓	✓
<b>B</b>	x	✓	x
<b>C</b>	✓	✓	✓
<b>D</b>	✓	x	✓

key  
 ✓ = cartilage present  
 x = cartilage not present

1287. 9700\_s20\_qp\_13 Q: 33

A student was asked to describe the differences between four microscope slides of sections taken from different parts of the gas exchange system.

- slide 1 not present: cartilage, glands  
present: few goblet cells, ciliated epithelial cells, smooth muscle
- slide 2 present: incomplete cartilage rings, glands, goblet cells, ciliated epithelial cells, smooth muscle
- slide 3 not present: cartilage, glands, goblet cells, smooth muscle  
present: squamous epithelial cells
- slide 4 present: plates of cartilage, glands, goblet cells, ciliated epithelial cells, smooth muscle

Which is the correct identification of the parts of the gas exchange system?

	slide 1	slide 2	slide 3	slide 4
<b>A</b>	alveolus	bronchiole	bronchus	trachea
<b>B</b>	bronchiole	bronchus	alveolus	trachea
<b>C</b>	bronchiole	trachea	alveolus	bronchus
<b>D</b>	bronchus	trachea	bronchiole	alveolus

1288. 9700\_w20\_qp\_11 Q: 32

What is correct about the transport of carbon dioxide by blood?

- The enzyme carbonic anhydrase catalyses the formation of carbonic acid in red blood cells.
- Carbon dioxide diffuses from active cells to red blood cells and reacts with water.
- Carbonic acid dissociates forming hydrogen ions that combine with haemoglobin to form carbaminohaemoglobin.

**A** 1, 2 and 3    **B** 1 and 2 only    **C** 2 and 3 only    **D** 3 only

1289. 9700\_w20\_qp\_11 Q: 33

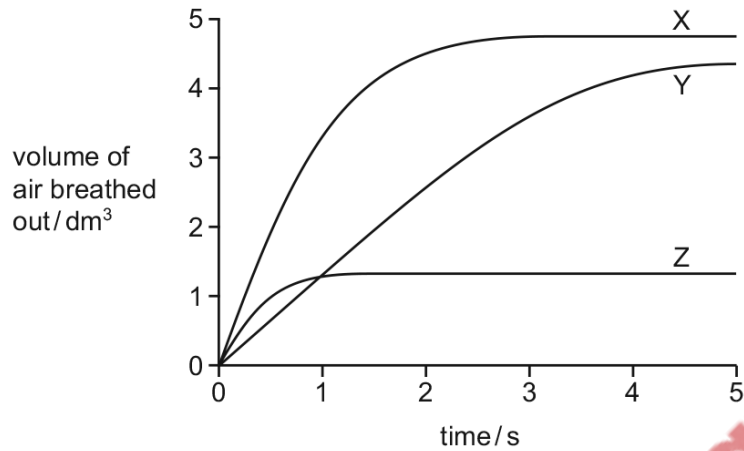
Which statements about all bronchioles are correct?

- they have goblet cells
- they have ciliated cells
- they have muscle tissue

**A** 1, 2 and 3    **B** 1 and 2 only    **C** 1 and 3 only    **D** 2 and 3 only

1290. 9700\_w20\_qp\_11 Q: 34

The graph shows the volume of air breathed out quickly and with force, following a deep breath in, for three different people, X, Y and Z.



What is a possible explanation for the differences in the volume of air breathed out by these people shown?

	chronic bronchitis	emphysema	normal lung function
<b>A</b>	X	Z	Y
<b>B</b>	Y	X	Z
<b>C</b>	Y	Z	X
<b>D</b>	Z	Y	X

1291. 9700\_w20\_qp\_12 Q: 32

Which are present in bronchioles?

- 1 endothelium
- 2 ciliated cells
- 3 smooth muscle tissue

**A** 1, 2 and 3    **B** 1 and 2 only    **C** 1 and 3 only    **D** 2 and 3 only

1292. 9700\_w20\_qp\_12 Q: 33

The partial pressure of oxygen in air inside alveoli is 14 kPa.

The partial pressure of oxygen in pulmonary capillaries is 6 kPa.

What will be the effect of these partial pressures on diffusion?

- A Carbon dioxide will not diffuse in any direction.
- B Oxygen will diffuse from alveoli into capillaries.
- C Oxygen will diffuse from capillaries into alveoli.
- D Oxygen will diffuse equally in both directions.

1293. 9700\_w20\_qp\_12 Q: 34

Which can be **directly** linked to a reduction in the surface area available for gas exchange in human lungs?

- 1 emphysema
- 2 lung cancer
- 3 smoking tobacco

- A 1, 2 and 3    B 1 and 2 only    C 1 and 3 only    D 2 and 3 only

1294. 9700\_w20\_qp\_12 Q: 35

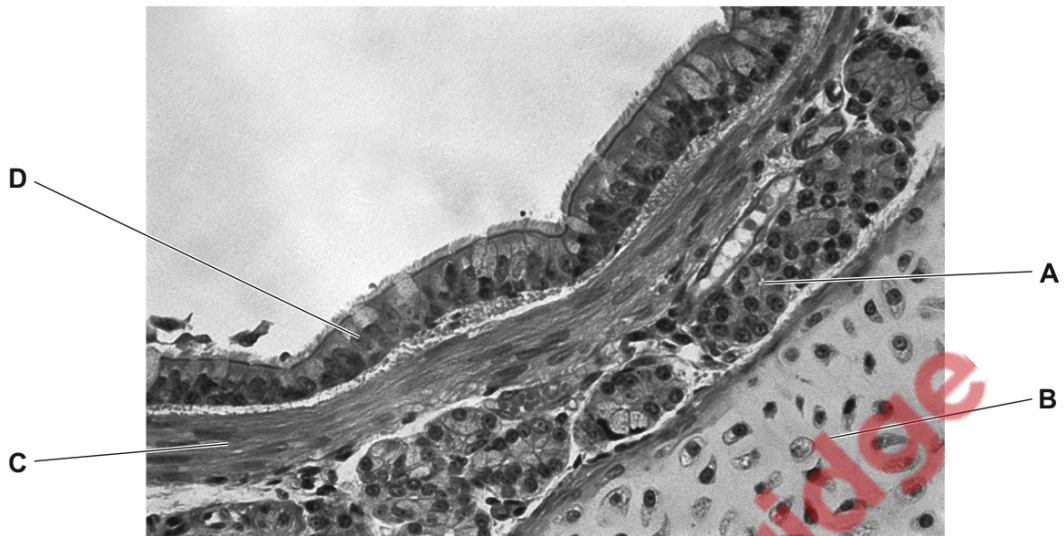
Which row is correct about the affinity between haemoglobin and the gases carbon dioxide, carbon monoxide and oxygen?

	highest affinity	→	lowest affinity
A	carbon monoxide	carbon dioxide	oxygen
B	carbon monoxide	oxygen	carbon dioxide
C	oxygen	carbon dioxide	carbon monoxide
D	oxygen	carbon monoxide	carbon dioxide

1295. 9700\_w20\_qp\_13 Q: 32

The diagram shows a photomicrograph of part of a bronchus.

Which label identifies smooth muscle?



1296. 9700\_w20\_qp\_13 Q: 33

Which statements about all bronchioles are correct?

- 1 They have epithelium.
- 2 They have goblet cells.
- 3 They have muscle tissue.

**A** 1, 2 and 3    **B** 1 and 3 only    **C** 2 only    **D** 3 only

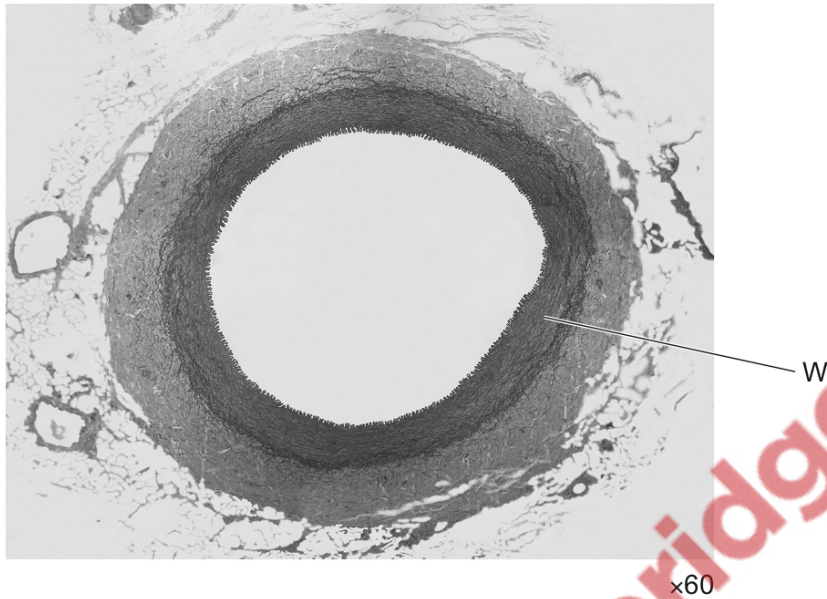
1297. 9700\_w20\_qp\_13 Q: 34

Which row shows the effects of emphysema?

	alveoli	elastin	number of capillaries
<b>A</b>	burst	less	decrease
<b>B</b>	burst	more	increase
<b>C</b>	shrink	less	increase
<b>D</b>	shrink	more	decrease

1298. 9700\_m19\_qp\_12 Q: 28

The photomicrograph shows a section through a structure found in mammals viewed using a light microscope.



What are the main components of layer W?

- A collagen fibres only
- B elastic fibres and collagen fibres
- C smooth muscle and elastic fibres
- D squamous epithelial cells forming an endothelium

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1299. 9700\_m19\_qp\_12 Q: 33

Which statement about typical bronchioles is correct?

- A They have cartilage and ciliated cells.
  - B They have goblet cells and smooth muscle.
  - C They have smooth muscle and cartilage.
  - D They have smooth muscle and ciliated cells.
-



1300. 9700\_s19\_qp\_11 Q: 35

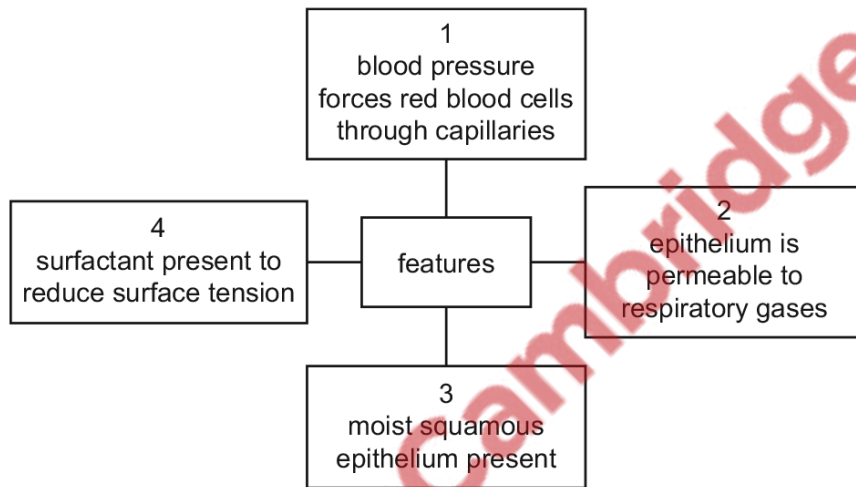
Which statements about bronchioles are correct?

- 1 They have ciliated cells.
- 2 They have goblet cells.
- 3 They have muscle tissue.

**A** 1, 2 and 3    **B** 1 and 2 only    **C** 1 and 3 only    **D** 2 and 3 only

1301. 9700\_s19\_qp\_11 Q: 36

Which features are important for the diffusion of oxygen out of an alveolus?

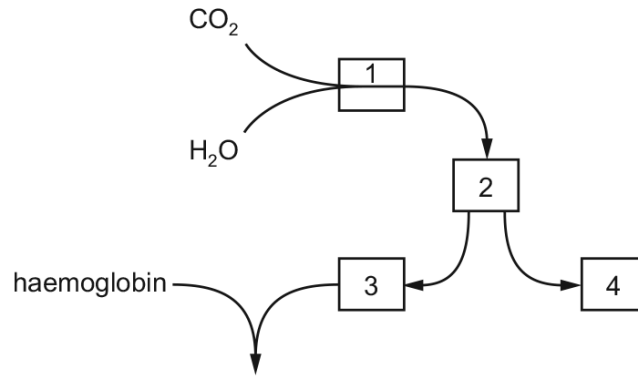


**A** 1, 2 and 3    **B** 1, 3 and 4    **C** 1 and 3 only    **D** 2 and 4 only



1302. 9700\_s19\_qp\_12 Q: 29

The diagram shows the pathway for the transport of carbon dioxide that occurs in red blood cells.



Which row is correct?

	1	2	3	4
<b>A</b>	carbaminohaemoglobin	haemoglobinic acid	hydrogen ions	hydrogencarbonate ions
<b>B</b>	carbonic anhydrase	carbonic acid	hydrogen ions	hydrogencarbonate ions
<b>C</b>	carboxyhaemoglobin	carbonic anhydrase	carbonic acid	carbon dioxide
<b>D</b>	haemoglobinic acid	carbonic acid	hydrogencarbonate ions	hydrogen ions

1303. 9700\_s19\_qp\_12 Q: 31

The large arteries close to the heart have a thick elastic layer in their walls.

Which statements about this layer are correct?

- 1 helps to maintain the blood pressure in arteries
- 2 reduces friction within the arteries
- 3 prevents too much pressure bursting the artery wall

**A** 1, 2 and 3    **B** 1 and 3 only    **C** 1 only    **D** 2 and 3 only

1304. 9700\_s19\_qp\_12 Q: 32

Which tissues are present in the walls of a trachea and an alveolus?

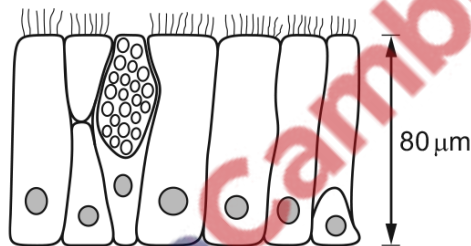
		tissue	
		epithelium with goblet cells	smooth muscle
<b>A</b>	trachea	✓	✓
	alveolus	✗	✗
<b>B</b>	trachea	✓	✓
	alveolus	✗	✓
<b>C</b>	trachea	✓	✗
	alveolus	✓	✓
<b>D</b>	trachea	✗	✓
	alveolus	✗	✗

key

✓ = present  
✗ = absent

1305. 9700\_w19\_qp\_11 Q: 34

The diagram shows a section through a type of epithelium.



Where is this type of epithelium found in the respiratory system?

	trachea	bronchus	all bronchioles
<b>A</b>	✓	✓	✓
<b>B</b>	✓	✓	✗
<b>C</b>	✓	✗	✓
<b>D</b>	✗	✓	✓

key

✓ = present

✗ = not present

1306. 9700\_w19\_qp\_12 Q: 32

Which statement is correct?

- A** Alveoli have goblet cells to produce mucus to trap pathogens from the air.
- B** Cartilage in the bronchi keeps the bronchi open and allows air to flow through freely.
- C** Complete rings of cartilage in the bronchioles make sure that air can reach the alveoli.
- D** During exercise, muscles in the bronchioles and alveoli relax to allow a greater flow of air.

1307. 9700\_w19\_qp\_12 Q: 33

Four types of cell in the gas exchange system are listed.

- J alveolus epithelium cell
- K ciliated cell
- L goblet cell
- M smooth muscle cell

The ticks (✓) in the table show specialised features of three of these types of cell.

	many mitochondria	lots of endoplasmic reticulum	many Golgi bodies
1	✓		
2	✓		
3	✓	✓	✓

Which row correctly matches the specialised feature with the correct cell?

	1	2	3
<b>A</b>	J	M	K
<b>B</b>	K	J	M
<b>C</b>	K	M	L
<b>D</b>	M	K	J

1308. 9700\_w19\_qp\_13 Q: 34

Which may contain ciliated epithelium?

- A** trachea only
- B** trachea and bronchi only
- C** trachea, bronchi and bronchioles
- D** bronchi, bronchioles and alveoli

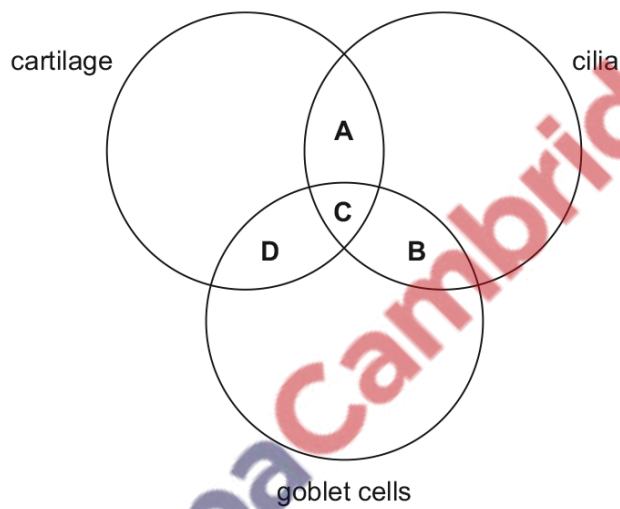
1309. 9700\_w19\_qp\_13 Q: 35

Which row shows the effects of chronic bronchitis?

	lymph glands	alveoli	bronchi	infection
<b>A</b>	destroyed	damaged	inflamed	absent
<b>B</b>	destroyed	inflamed	scarred	present
<b>C</b>	swollen	damaged	scarred	present
<b>D</b>	swollen	inflamed	inflamed	absent

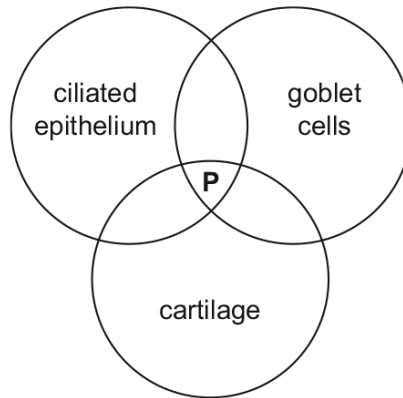
1310. 9700\_m18\_qp\_12 Q: 35

What identifies the structures present in a bronchus?



1311. 9700\_s18\_qp\_11 Q: 31

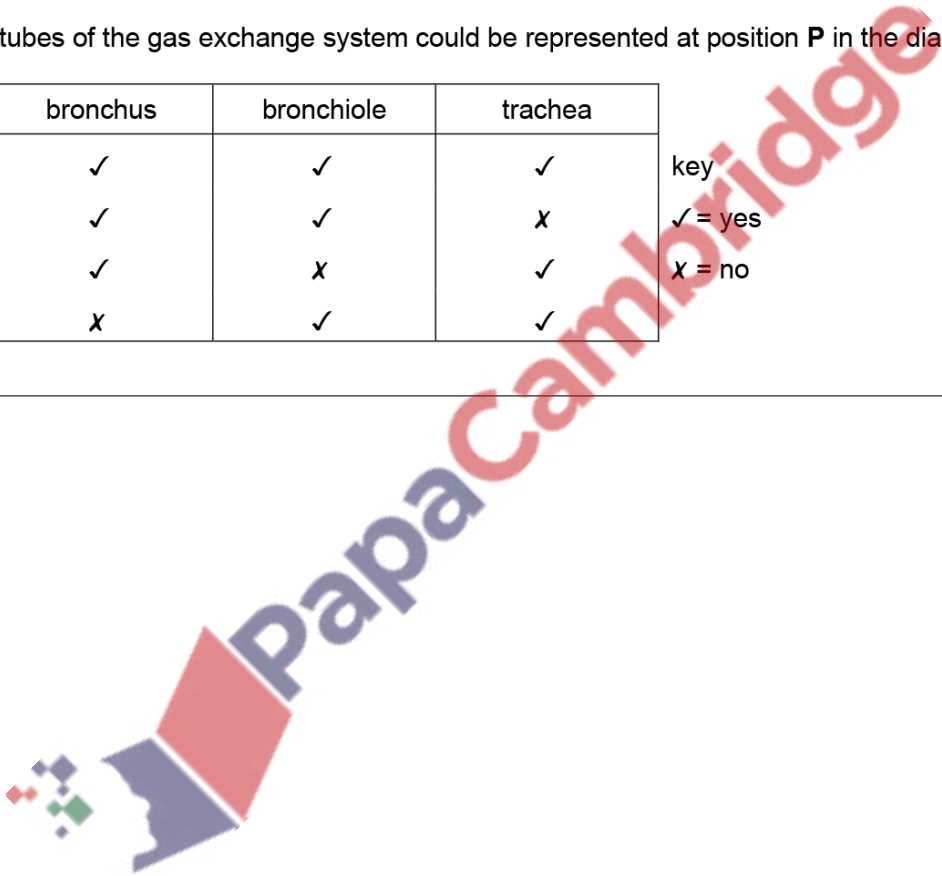
The diagram shows three features found in tissues of the gas exchange system.



Which tubes of the gas exchange system could be represented at position **P** in the diagram?

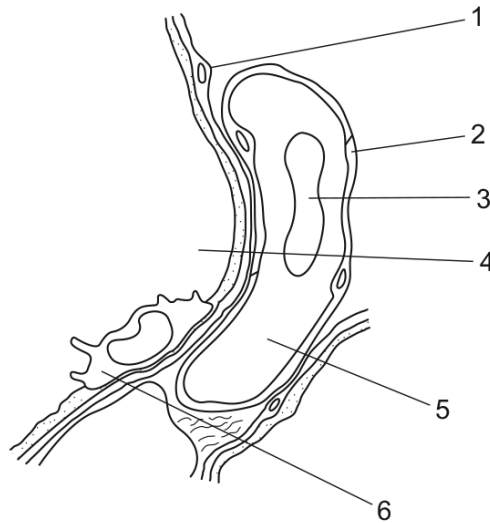
	bronchus	bronchiole	trachea
<b>A</b>	✓	✓	✓
<b>B</b>	✓	✓	x
<b>C</b>	✓	x	✓
<b>D</b>	x	✓	✓

key  
✓ = yes  
x = no



1312. 9700\_s18\_qp\_11 Q: 32

The diagram shows a magnified section of part of the lungs containing specialised tissues.



Which row is correct for structures labelled 1 to 6?

	contains high proportion of		
	carbonic anhydrase	HCO <sub>3</sub> <sup>-</sup> ions	lysosomes
<b>A</b>	1	3	4
<b>B</b>	2	4	5
<b>C</b>	3	5	6
<b>D</b>	4	6	1

1313. 9700\_s18\_qp\_12 Q: 34

Which of these structures contain cartilage and cilia?

- 1 bronchi
- 2 bronchioles
- 3 trachea

**A** 1, 2 and 3    **B** 1 and 2 only    **C** 1 and 3 only    **D** 3 only

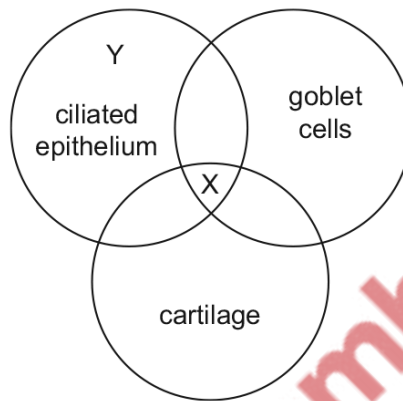
1314. 9700\_s18\_qp\_13 Q: 34

What helps to maintain a concentration gradient between blood and the air in the alveolus?

- A the flow of blood through the lungs
- B the presence of haemoglobin in blood cells
- C the single-celled alveolar walls
- D the squamous epithelium of capillaries

1315. 9700\_s18\_qp\_13 Q: 35

The diagram shows three features found in the tissues of the gas exchange system.



Which structures of the gas exchange system could be represented at position X and at position Y in the diagram?

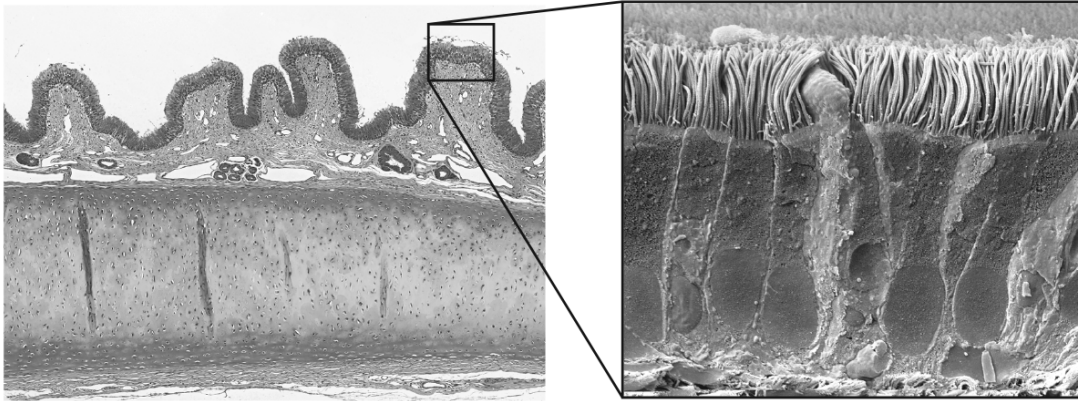
- 1 bronchiole
- 2 trachea
- 3 bronchus

	X	Y
A	1	2 and 3
B	1 and 3	2
C	2	1 and 3
D	2 and 3	1



1316. 9700\_w18\_qp\_11 Q: 33

The photomicrographs show a cross-section through the lining of part of the respiratory system.



Which statements are correct?

- 1 Goblet cells are visible between squamous epithelium cells.
- 2 Smooth muscle is visible.
- 3 The section cannot be from a bronchiole as cartilage is visible.

**A** 1, 2 and 3    **B** 1 and 2 only    **C** 1 and 3 only    **D** 2 and 3 only

1317. 9700\_w18\_qp\_11 Q: 34

In the lungs, oxygen and carbon dioxide pass through cell surface membranes by diffusion.

Which row is correct?

	number of cell surface membranes diffused through by	
	oxygen from air	carbon dioxide to air
<b>A</b>	3	2
<b>B</b>	3	2 or 3
<b>C</b>	5	4
<b>D</b>	5	4 or 5

1318. 9700\_w18\_qp\_12 Q: 33

Which tissues are present in a bronchus?

	cartilage	ciliated epithelium	smooth muscle
<b>A</b>	✓	✓	✓
<b>B</b>	✓	✓	x
<b>C</b>	✓	x	✓
<b>D</b>	x	✓	✓

key

✓ = present

x = absent

1319. 9700\_w18\_qp\_13 Q: 32

A person moves from sea level to live at a high altitude.

After three months living at high altitude, which change would be found in this person when at rest?

- A** increased volume of blood per heartbeat
- B** increased breathing rate
- C** increased heart rate
- D** increased mass of red blood cells

1320. 9700\_m17\_qp\_12 Q: 36

Which tissues may be found in bronchioles?

- A** cartilage, ciliated epithelium, glandular tissue
- B** ciliated epithelium, elastic fibres, smooth muscle
- C** elastic fibres, cartilage, smooth muscle
- D** smooth muscle, glandular tissue, cartilage

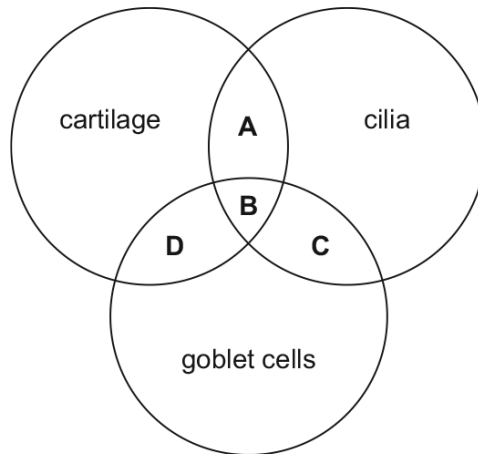
1321. 9700\_s17\_qp\_11 Q: 37

Which characteristic of the human gaseous exchange surface and the lungs, maintains the necessary concentration gradients for carbon dioxide and oxygen?

- A** good ventilation of the lungs
- B** large surface area of the alveoli
- C** low resistance to air flow
- D** the walls of the alveoli are thin

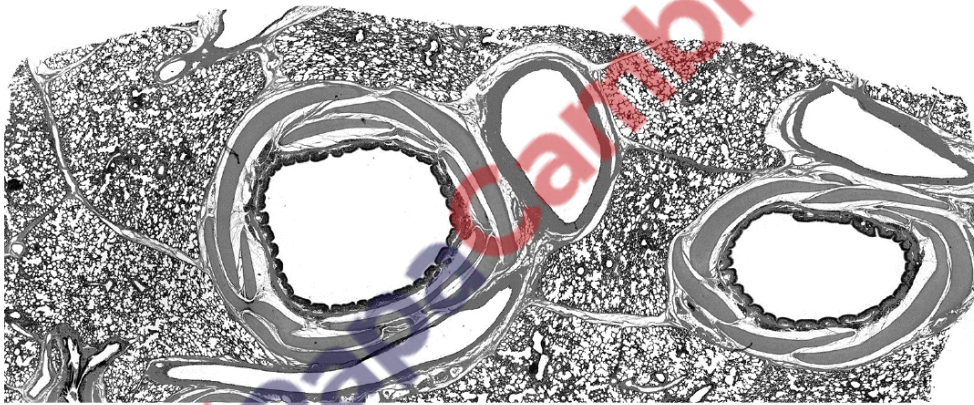
1322. 9700\_s17\_qp\_11 Q: 38

Which identifies the tissues present in the trachea?



1323. 9700\_s17\_qp\_12 Q: 31

The photomicrograph shows a section through lung tissue.



Which structures are present in this photomicrograph?

	artery	vein	bronchioles	bronchus	trachea
<b>A</b>	✓	✓	x	✓	x
<b>B</b>	✓	x	✓	x	✓
<b>C</b>	x	✓	✓	✓	x
<b>D</b>	x	x	x	✓	✓

key

✓ = present

x = absent

1324. 9700\_s17\_qp\_12 Q: 33

Some of the requirements of an efficient gas exchange system are a large surface area and a short diffusion distance.

What is correct about how alveoli are adapted to meet these requirements?

	large surface area	short diffusion distance
<b>A</b>	collagen and elastin fibres that allow the alveoli to stretch	an extracellular layer round the alveolus wall contains blood capillaries
<b>B</b>	gases dissolve in a layer of liquid to speed up diffusion	walls of alveoli are squamous epithelium
<b>C</b>	many folded interconnected alveoli	capillaries are next to alveolus wall
<b>D</b>	sac shape of alveoli formed by squamous cells	red blood cells are very close to capillary walls

1325. 9700\_s17\_qp\_13 Q: 31

Which description of part of the gas exchange system is correct?

	part of gas exchange system	cartilage	ciliated epithelium	goblet cells	smooth muscle
<b>A</b>	alveolus	x	✓	x	x
<b>B</b>	bronchus	✓	✓	✓	✓
<b>C</b>	bronchiole	x	✓	✓	x
<b>D</b>	trachea	✓	✓	✓	x

key  
✓ = present  
x = absent

1326. 9700\_s17\_qp\_13 Q: 32

When a person suffers an asthma attack, the tubes of the gas exchange system narrow and extra mucus is produced.

Which changes occur during an asthma attack?

- 1 Activity of ciliated epithelium increases.
- 2 Endocytosis in goblet cells increases.
- 3 Smooth muscles are more active.

**A** 1, 2 and 3    **B** 1 and 2 only    **C** 1 and 3 only    **D** 2 and 3 only

1327. 9700\_s17\_qp\_13 Q: 33

Which factors result from paralysis of cilia caused by smoking?

- 1 accumulation of mucus
- 2 increased chance of lung infection
- 3 emphysema
- 4 scarring of airway lining

A 1 and 2      B 1 and 4      C 2 and 3      D 3 and 4

1328. 9700\_s17\_qp\_13 Q: 34

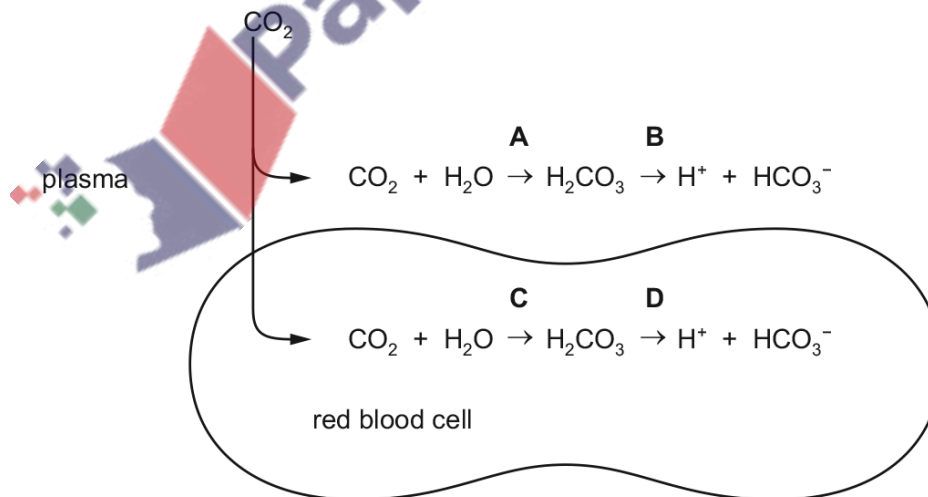
What is the **minimum** number of cell membranes a molecule of carbon dioxide and a molecule of oxygen pass through during gas exchange between alveoli and the plasma in the capillaries?

	carbon dioxide	oxygen
<b>A</b>	2	4
<b>B</b>	3	5
<b>C</b>	4	4
<b>D</b>	4	5

1329. 9700\_w17\_qp\_11 Q: 30

The diagram shows some of the reactions of carbon dioxide when it enters the blood from cells in a metabolically active tissue.

Which reaction is catalysed by the enzyme carbonic anhydrase?



1330. 9700\_w17\_qp\_11 Q: 31

How many phospholipid bilayers does oxygen pass through in diffusing from an alveolar air space to form oxyhaemoglobin in a red blood cell in a mammalian lung?

- A** 3                      **B** 5                      **C** 6                      **D** 9

1331. 9700\_w17\_qp\_11 Q: 32

Which statements about the human gas exchange system are correct?

- 1 The absence of cartilage in small bronchioles allows them to expand.
- 2 The walls of the alveoli are made of cuboidal epithelium.
- 3 Alveoli secrete surfactant which reduces surface tension in the lungs.
- 4 The trachea and bronchi are supported by circles of cartilage.

- A** 1 and 2              **B** 1 and 3              **C** 2 and 4              **D** 3 and 4

1332. 9700\_w17\_qp\_11 Q: 33

A disease damages alveoli walls, causing the alveoli to burst.

What effect does this have on the gas exchange system?

	surface area for gas exchange	maximum volume of air breathed out
<b>A</b>	decreases	decreases
<b>B</b>	decreases	increases
<b>C</b>	decreases	no change
<b>D</b>	no change	no change

1333. 9700\_w17\_qp\_12 Q: 34

A good gas exchange system maintains a steep diffusion gradient, has a large total surface area and a short diffusion distance.

Which feature of the human gas exchange system helps to maintain a steep diffusion gradient?

- A** A large number of alveoli are present in each lung.
- B** Alveoli walls contain elastic fibres allowing expansion.
- C** The air brought into the alveoli by ventilation is high in oxygen.
- D** The endothelium of the capillary wall is made of flattened cells.

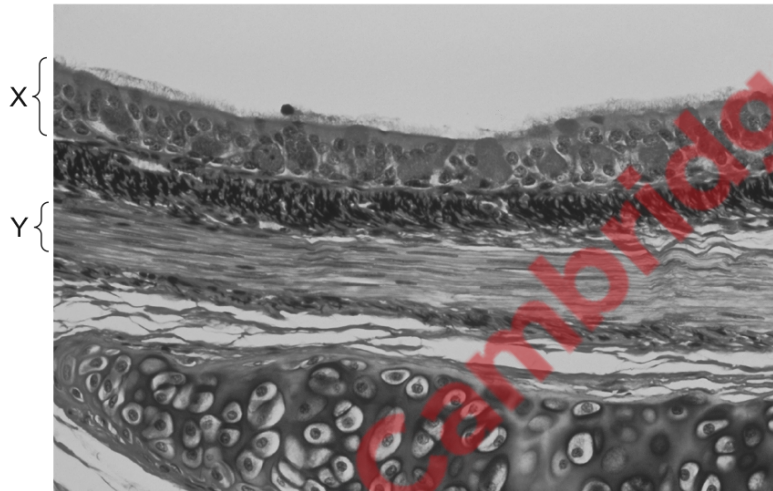
1334. 9700\_w17\_qp\_12 Q: 35

Which statement about bronchioles is correct?

- A They have cartilage and ciliated cells.
- B They have cartilage and elastic tissue.
- C They have cartilage and muscle tissue.
- D They have elastic tissue and ciliated cells.

1335. 9700\_w17\_qp\_13 Q: 35

The photomicrograph shows a cross-section through a bronchus.



What is the function of the tissues X and Y?

	X	Y
A	secrete mucus	prevent collapse of the airway
B	support the airway	dilate airway
C	trap dust and dirt	secrete mucus
D	waft dust and dirt upwards	constrict airway

1336. 9700\_m16\_qp\_12 Q: 29

Which reactions take place at a higher rate in a capillary in an alveolus than in a capillary in active muscle?

- 1 carbon dioxide + water  $\rightarrow$  carbonic acid
- 2 carbon dioxide + haemoglobin  $\rightarrow$  carboxyhaemoglobin
- 3 haemoglobin + hydrogen ions  $\rightarrow$  haemoglobinic acid
- 4 hydrogencarbonate ions + hydrogen ions  $\rightarrow$  carbon dioxide + water

**A** 1 and 2      **B** 3 and 4      **C** 1 only      **D** 4 only

1337. 9700\_m16\_qp\_12 Q: 34

The photomicrograph shows a section through part of a bronchus wall.



What is the function of the tissue labelled X?

- A** contracts to constrict the airway
- B** helps to widen the airway when at high altitudes
- C** produces mucus to trap dust particles and bacteria
- D** supports the airway to prevent collapse

1338. 9700\_s16\_qp\_11 Q: 33

What would be seen in an electron micrograph of a bronchus wall?

- 1 cartilage cells
- 2 ciliated cells
- 3 exocytotic vesicles

**A** 1, 2 and 3      **B** 1 and 2 only      **C** 1 and 3 only      **D** 2 and 3 only



1339. 9700\_s16\_qp\_11 Q: 34

Which parts of the human gas exchange system may typically contain macrophages?

	trachea	bronchus	bronchiole	alveolus
<b>A</b>	✓	✓	✓	✓
<b>B</b>	✓	✓	✓	✗
<b>C</b>	✗	✗	✓	✓
<b>D</b>	✗	✗	✗	✓

✓ = may contain macrophages

✗ = may not contain macrophages

1340. 9700\_s16\_qp\_11 Q: 35

An oxygen molecule diffuses from the air in an alveolus through cells to haemoglobin in a red blood cell.

What is the minimum number of cell surface membranes through which this molecule must pass?

**A** 2

**B** 3

**C** 4

**D** 5

1341. 9700\_s16\_qp\_12 Q: 32

A student was asked to describe the differences between four microscope slides of sections taken from different parts of the gas exchange system.

 slide 1 not present: cartilage, glands  
 present: few goblet cells, ciliated epithelial cells, smooth muscle

slide 2 present: incomplete cartilage rings, glands, goblet cells, ciliated epithelial cells, smooth muscle

 slide 3 not present: cartilage, glands, goblet cells, smooth muscle  
 present: squamous epithelial cells

slide 4 present: plates of cartilage, glands, goblet cells, ciliated epithelial cells, smooth muscle

Which is the correct identification of the parts of the gas exchange system?

	slide 1	slide 2	slide 3	slide 4
<b>A</b>	alveolus	bronchiole	bronchus	trachea
<b>B</b>	bronchiole	bronchus	alveolus	trachea
<b>C</b>	bronchiole	trachea	alveolus	bronchus
<b>D</b>	bronchus	trachea	bronchiole	alveolus

1342. 9700\_s16\_qp\_12 Q: 34

What is correct about the affinity between haemoglobin and the gases carbon dioxide, carbon monoxide and oxygen?

	highest affinity	—————>	lowest affinity
<b>A</b>	carbon monoxide	carbon dioxide	oxygen
<b>B</b>	carbon monoxide	oxygen	carbon dioxide
<b>C</b>	oxygen	carbon dioxide	carbon monoxide
<b>D</b>	oxygen	carbon monoxide	carbon dioxide

1343. 9700\_s16\_qp\_13 Q: 33

Goblet cells are found in the trachea.

Which organelles would be found in large numbers in a goblet cell?

	Golgi body	mitochondria	ribosomes
<b>A</b>	✓	✓	✓
<b>B</b>	✓	✓	x
<b>C</b>	✓	x	✓
<b>D</b>	x	✓	✓

key

✓ = present in large numbers

x = not present in large numbers

1344. 9700\_s16\_qp\_13 Q: 34

What is the minimum number of layers of phospholipids that a molecule of oxygen passes through when diffusing from the alveoli, through cells, to haemoglobin in the red blood cells?

- A** 4                      **B** 6                      **C** 8                      **D** 10

1345. 9700\_w16\_qp\_11 Q: 33

A student viewed three slides at both low magnification and high magnification. Each slide was a section through a different airway of the gas exchange system.

The student observed three features in each slide.

slide	three features observed by student
1	irregular arrangement of cartilage highly folded inner layer cilia on epithelial cells
2	very few goblet cells cilia on epithelial cells thick layer of smooth muscle relative to wall thickness
3	smooth muscle tissue blood vessels many goblet cells

Which row is the correct set of identifications for the three slides?

	slide 1	slide 2	slide 3
<b>A</b>	bronchus	bronchiole	trachea
<b>B</b>	bronchus	trachea	bronchiole
<b>C</b>	trachea	bronchiole	bronchus
<b>D</b>	trachea	bronchus	bronchiole

1346. 9700\_w16\_qp\_11 Q: 34

Which organelle is present in large quantities in ciliated epithelial cells?

- A** Golgi body
- B** lysosomes
- C** mitochondria
- D** rough endoplasmic reticulum

1347. 9700\_w16\_qp\_11 Q: 35

In some cases where a person has lung disease, the partial pressure of oxygen in the pulmonary veins is less than the partial pressure of oxygen in the alveoli.

What could explain the difference in partial pressure of oxygen?

- 1 A high proportion of alveoli are collapsed and do not have enough alveolar capillaries.
- 2 The partial pressure of oxygen in the pulmonary arteries is lower than in the alveolar air.
- 3 The rate of diffusion of oxygen from the alveolar air to the surrounding alveolar capillaries is too slow.

**A** 1, 2 and 3    **B** 1 and 2 only    **C** 1 and 3 only    **D** 2 and 3 only

1348. 9700\_w16\_qp\_12 Q: 34

A student made some labelled drawings of lung tissue using the high-power lens of a light microscope, but did not label two airways, P and Q.

The drawing of the lining layer of P showed both ciliated cells and goblet cells, whilst the drawing of the lining layer of Q showed ciliated cells but very few goblet cells.

What are airways P and Q?

	airway	
	P	Q
<b>A</b>	bronchiole	trachea
<b>B</b>	bronchiole	bronchus
<b>C</b>	bronchus	bronchiole
<b>D</b>	trachea	bronchus

1349. 9700\_w16\_qp\_12 Q: 35

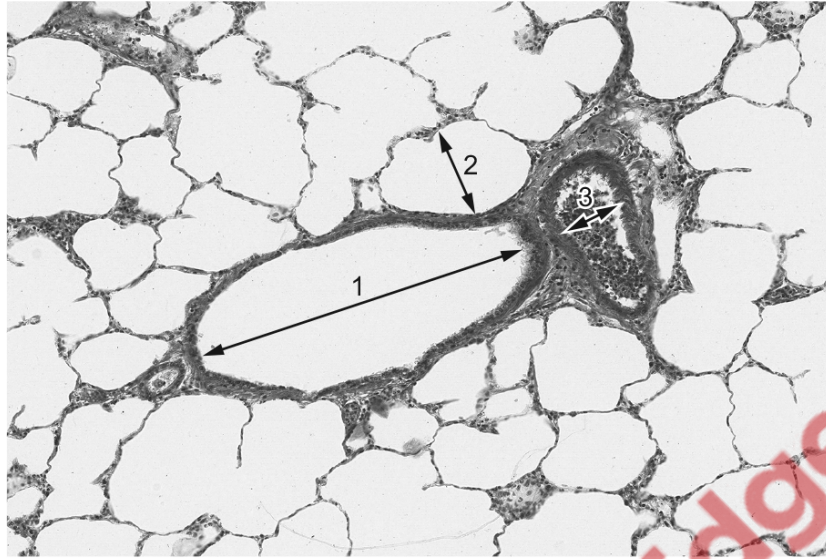
What maintains the steep concentration gradients needed for successful gas exchange in the lungs?

- 1 Air flow in the alveoli is in the opposite direction to blood flow in the capillaries.
- 2 Blood arrives in the lungs with a lower oxygen concentration and a higher carbon dioxide concentration than the air in the alveoli.
- 3 Blood is constantly flowing through and out of the lungs, bringing a fresh supply of red blood cells.

**A** 1, 2 and 3    **B** 1 and 2 only    **C** 1 and 3 only    **D** 2 and 3 only

1350. 9700\_w16\_qp\_12 Q: 36

The photomicrograph shows part of the lung as seen using a light microscope.



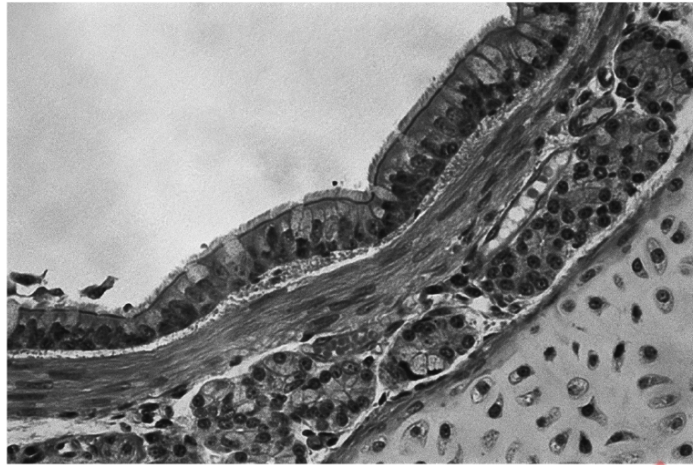
Which row is correct for the features labelled 1, 2 and 3?

	1	2	3
<b>A</b>	alveolus	bronchiole	capillary
<b>B</b>	alveolus	capillary	bronchiole
<b>C</b>	bronchiole	alveolus	small artery
<b>D</b>	small artery	alveolus	bronchiole



1351. 9700\_w16\_qp\_13 Q: 32

The image shown is a photomicrograph of a transverse section of part of the gas exchange system.



What describes the image?

- A** a thin inner layer of ciliated epithelial cells on top of a layer containing cartilage and supported by elastic fibres
- B** a very thin epithelial lining with walls containing elastic fibres, surrounded by many blood vessels
- C** an inner layer of ciliated epithelial and goblet cells on top of elastic fibres and supported by an outer layer consisting of blocks of cartilage
- D** an inner layer of ciliated epithelial and goblet cells on top of loose tissue with mucous glands supported by an outer layer of cartilage

1352. 9700\_s15\_qp\_11 Q: 31

Which row shows a function of each of the named tissues in the gas exchange system?

	cartilage	ciliated epithelium	smooth muscle	elastic fibres
<b>A</b>	keep the airways open	move mucus out of the airways	change the diameter of the bronchioles	allows alveoli to expand during breathing in
<b>B</b>	prevent choking	secrete mucus	contracts to increase air flow	helps to support the trachea
<b>C</b>	prevent the trachea collapsing when coughing	keep a layer of mucus lining the air ways	trap bacteria and dirt in air	cause elastic recoil when breathing out
<b>D</b>	support the small bronchioles	trap bacteria and dirt in air	control the flow of air to and from the alveoli	allows stretching of trachea for movement

1353. 9700\_s15\_qp\_12 Q: 27

Which reaction takes place in a capillary in the lungs?

- A the formation of carbaminohaemoglobin from carbon dioxide and haemoglobin
- B the formation of carbon dioxide and water from hydrogen carbonate ions and hydrogen ions
- C the formation of carbonic acid from carbon dioxide and water
- D the formation of haemoglobinic acid from haemoglobin and hydrogen ions

1354. 9700\_s15\_qp\_12 Q: 31

What correctly describes the role of elastic fibres in the lungs?

- A They allow the walls of stretched alveoli to recoil as air is breathed out.
- B They increase in the walls of alveoli as a result of the release of the enzyme elastase.
- C They increase in the walls of the alveoli as emphysema develops.
- D They prevent the walls of the alveoli from collapsing as air is breathed in.

1355. 9700\_s15\_qp\_13 Q: 33

A person breathes in small particles from a very dusty environment.

What effect will this have on B-lymphocytes and goblet cells?

	B-lymphocytes	goblet cells
A	less active	more active
B	less active	no change
C	more active	more active
D	no change	less active

1356. 9700\_w15\_qp\_11 Q: 32

What would be seen in a photomicrograph of the wall of the trachea?

	tissue		
	elastic fibres	epidermis	smooth muscle
A	✓	✓	✓
B	✓	✓	x
C	✓	x	✓
D	x	✓	x

key

✓ = present

x = absent

1357. 9700\_w15\_qp\_12 Q: 31

Which row about the human gas exchange system is correct?

		trachea	bronchus	alveolus
<b>A</b>	cartilage	present	present	absent
<b>B</b>	ciliated epithelium	absent	present	absent
<b>C</b>	goblet cells	present	absent	absent
<b>D</b>	smooth muscle	present	present	present

1358. 9700\_w15\_qp\_13 Q: 32

What is a correct location of cartilage and smooth muscle in the human gas exchange system?

	cartilage	smooth muscle
<b>A</b>	bronchioles	bronchioles
<b>B</b>	bronchioles	trachea
<b>C</b>	trachea	alveoli
<b>D</b>	trachea	bronchi

1359. 9700\_w15\_qp\_13 Q: 33

Which factors maintain the diffusion gradient for carbon dioxide at the surface of the alveoli?

- 1 blood flow past the alveoli
- 2 breathing movement exchanging air in the lungs
- 3 thin epithelial lining of the alveoli

**A** 1 and 2      **B** 1 and 3      **C** 2 and 3      **D** 1 only

1360. 9700\_w15\_qp\_13 Q: 34

The surface tension of the layer of liquid lining the alveoli tends to pull the walls inwards so alveoli could collapse.

Which statements could explain how this is prevented?

- 1 alveolar fluid is moved around by cilia
- 2 elastic fibres keep the alveoli open
- 3 epithelial cells secrete a chemical that reduces the cohesion in water

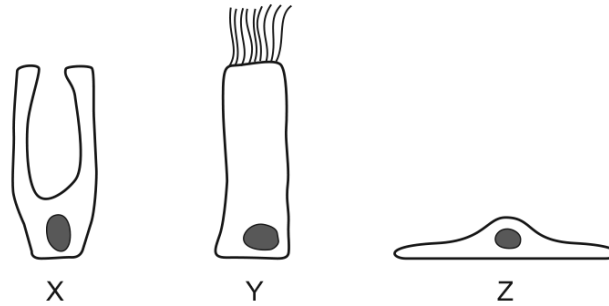
**A** 1 and 2      **B** 1 and 3      **C** 2 and 3      **D** 3 only



## 9.2 Smoking

1361. 9700\_m20\_qp\_12 Q: 32

The diagram represents three types of cell found in the human gas exchange system.



Which of these cell types could be affected when a person is exposed to tar in cigarette smoke?

- A** X, Y and Z    **B** X and Z only    **C** Y and Z only    **D** Y only

1362. 9700\_s20\_qp\_11 Q: 35

Chronic obstructive pulmonary disease (COPD) includes emphysema.

Which effects does emphysema have on gaseous exchange?

- 1 surface area to volume ratio of lungs decreases
- 2 distance of the diffusion pathway decreases
- 3 volume of oxygen diffused per unit time decreases

- A** 1, 2 and 3    **B** 1 and 2 only    **C** 1 and 3 only    **D** 2 and 3 only



1363. 9700\_s20\_qp\_12 Q: 33

Carbon monoxide, nicotine and tar are components of tobacco smoke.

Which row correctly describes their effect on a smoker's body?

	carbon monoxide	nicotine	tar
<b>A</b>	causes loss of consciousness at very low concentrations	increases the diameter of blood vessels	destroys cilia on cells lining the airways
<b>B</b>	forms a stable compound with haemoglobin	increases blood pressure	stimulates goblet cells to secrete mucus
<b>C</b>	forms carbaminohaemoglobin	increases the diameter of the coronary artery	settles on cells lining the airways
<b>D</b>	forms carboxyhaemoglobin	decreases the heart rate	contains carcinogens

1364. 9700\_s20\_qp\_12 Q: 34

Which statements about chronic obstructive pulmonary disease (COPD) are correct?

- 1 The disease can often be reversed by treatment.
- 2 The patient's symptoms normally do not change.
- 3 The patient is normally over 30 years old.
- 4 The patient coughs frequently, producing a lot of mucus.

**A** 1, 2 and 3    **B** 1, 2 and 4    **C** 1, 3 and 4    **D** 2, 3 and 4

1365. 9700\_s20\_qp\_13 Q: 34

Cigarette smoke contains carbon monoxide, nicotine and tar.

Which row correctly describes how these substances affect the body?

	carbon monoxide	nicotine	tar
<b>A</b>	stimulates nerve endings	stimulates the nervous system to reduce the diameter of the arteries	leads to obstructive lung disease
<b>B</b>	forms carbaminohaemoglobin	increases the risk of blood clots	blocks goblet cells
<b>C</b>	causes increased blood pressure	combines with haemoglobin	increases the risk of blood clots
<b>D</b>	combines with haemoglobin	stimulates nerve endings	carcinogenic

1366. 9700\_s20\_qp\_13 Q: 35

Chronic obstructive pulmonary disease (COPD) includes chronic bronchitis and emphysema.

In what order do these events occur as emphysema develops?

- 1 Macrophages move into alveolar air spaces.
- 2 Tar paralyses cilia.
- 3 Macrophages secrete elastase.
- 4 Bacteria accumulate in alveoli.

- A** 2 → 4 → 1 → 3  
**B** 2 → 4 → 3 → 1  
**C** 4 → 1 → 3 → 2  
**D** 4 → 2 → 3 → 1

1367. 9700\_s20\_qp\_13 Q: 36

If someone smokes cigarettes, what will be the immediate result of this action on the red blood cells?

- A** Carbon monoxide will combine with the globin in haemoglobin.  
**B** Carbon monoxide replaces carbon dioxide in carbaminohaemoglobin.  
**C** Less oxyhaemoglobin will form.  
**D** More haemoglobin acid will be formed.

1368. 9700\_m19\_qp\_12 Q: 34

Tobacco smoke contains substances that affect the functioning of the human body.

substance	effect
w nicotine	1 decreases oxygenation of haemoglobin
x carbon monoxide	2 increases risk of cancer
y tar	3 increases risk of blood clotting

What shows the substances matched with their correct effects?

- A** w-1, x-2, y-3  
**B** w-1, x-3, y-2  
**C** w-2, x-1, y-3  
**D** w-3, x-1, y-2

1369. 9700\_s19\_qp\_11 Q: 34

Which row correctly describes the short-term effects of carbon monoxide and nicotine on the body of a smoker?

	demand for oxygen	concentration of oxygen in blood
<b>A</b>	decreased by carbon monoxide	increased by nicotine
<b>B</b>	decreased by nicotine	increased by carbon monoxide
<b>C</b>	increased by carbon monoxide	decreased by nicotine
<b>D</b>	increased by nicotine	decreased by carbon monoxide

1370. 9700\_s19\_qp\_12 Q: 33

The surface tension of the layer of liquid lining the alveoli tends to pull the walls inwards so alveoli could collapse.

Which statements could explain how this is prevented?

- 1 Alveolar fluid is moved around by cilia.
- 2 Elastic fibres keep the alveoli open.
- 3 Epithelial cells secrete a chemical that reduces the cohesion in water.

- A** 1 and 2      **B** 1 and 3      **C** 2 and 3      **D** 3 only

1371. 9700\_w19\_qp\_11 Q: 35

In chronic obstructive pulmonary disease (COPD), airflow through the airways is reduced.

Which statements explain the reduced airflow?

- 1 More mucus is secreted into the airways.
- 2 Airways and alveoli lose their elasticity.
- 3 Many of the alveoli are destroyed.
- 4 Carbon monoxide binds irreversibly to haemoglobin.

- A** 1, 2, 3 and 4  
**B** 1, 2 and 3 only  
**C** 1, 3 and 4 only  
**D** 2, 3 and 4 only

1372. 9700\_w19\_qp\_12 Q: 34

Some symptoms of chronic obstructive pulmonary disease (COPD) are listed.

- 1 bursting of alveoli
- 2 loss of elastic fibres
- 3 increase in secretion of mucus
- 4 reduction in surface area for gaseous exchange
- 5 narrowing of airways

Which of these are also the symptoms of emphysema?

- A** 1, 2 and 4    **B** 1, 3 and 5    **C** 2, 3 and 5    **D** 3, 4 and 5

1373. 9700\_m18\_qp\_12 Q: 34

Chronic obstructive pulmonary disease (COPD) includes bronchitis and emphysema.

Which symptom is specific to emphysema?

- A** excess mucus secretion by the goblet cells  
**B** inflammation of the bronchial epithelium  
**C** loss of elasticity of the alveolar walls  
**D** thickening of the smooth muscle of the bronchi

1374. 9700\_s18\_qp\_11 Q: 33

A short-term effect of smoking is a decreased blood supply to the fingers and toes.

Which component of cigarette smoke causes this effect?

- A carbon monoxide
- B carcinogens
- C nicotine
- D tar

1375. 9700\_s18\_qp\_11 Q: 34

The symptoms of two diseases are listed.

disease 1	disease 2
coughing up blood pain when breathing loss of weight	shortness of breath difficulty breathing out fatigue

Which row identifies diseases 1 and 2?

	disease 1	disease 2
<b>A</b>	chronic bronchitis	emphysema
<b>B</b>	emphysema	lung cancer
<b>C</b>	lung cancer	chronic bronchitis
<b>D</b>	lung cancer	emphysema

1376. 9700\_s18\_qp\_12 Q: 35

Which row identifies both the type of pathogen that causes cholera and the way in which cholera is transmitted from person to person?

	type of pathogen	method of transmission
<b>A</b>	bacteria	drinking water contaminated with the pathogen
<b>B</b>	bacteria	inhaling water droplets contaminated with the pathogen
<b>C</b>	virus	drinking water contaminated with the pathogen
<b>D</b>	virus	inhaling water droplets contaminated with the pathogen

1377. 9700\_s18\_qp\_13 Q: 36

Blood tests on people who regularly smoke cigarettes show that approximately 5% of their haemoglobin carries carbon monoxide.

People who smoke e-cigarettes inhale a vapour with no carbon monoxide. A person who smokes cigarettes regularly, switches to e-cigarettes and a blood test is carried out after a month.

Which chemical in the blood would be found in a lower concentration in this blood test?

- A carbaminohaemoglobin
- B carbonic anhydrase
- C carboxyhaemoglobin
- D hydrogencarbonate ions

1378. 9700\_s18\_qp\_13 Q: 37

Emphysema is a type of chronic obstructive pulmonary disease, COPD. People with emphysema have a very low level of a plasma protein which inhibits the enzyme elastase.

Elastase breaks down the elastic fibres in the bronchioles and alveoli.

Which are effects of the low levels of inhibitor in people with emphysema?

- 1 alveoli do not stretch and recoil properly during inhalation and exhalation
- 2 blood is poorly oxygenated resulting in a rapid breathing rate
- 3 bronchioles collapse during exhalation trapping air in the alveoli

- A 1, 2 and 3
- B 1 and 3 only
- C 1 only
- D 2 and 3 only

1379. 9700\_w18\_qp\_11 Q: 35

Which flow diagram correctly describes the effect of tar entering the lungs?

- |          |   |   |  |   |  |
|----------|---|---|--|---|--|
| <b>A</b> | carcinogens<br>come into<br>contact with<br>DNA | → | mutation<br>occurs                           | → | uncontrolled<br>cell division              |
| <b>B</b> | goblet cells<br>secrete more<br>mucus           | → | mucus<br>accumulates<br>causing<br>infection | → | phagocytes<br>attracted by<br>inflammation |
| <b>C</b> | mucus<br>accumulates<br>causing infection       | → | phagocytes<br>attracted by<br>inflammation   | → | elastase<br>destroys the<br>alveolar walls |
| <b>D</b> | mutation occurs                                 | → | phagocytes<br>attracted by<br>inflammation   | → | causes<br>irritation and<br>coughing       |

1380. 9700\_w18\_qp\_12 Q: 34

Cigarette smoke contains tar.

Which statements describe the effect of tar on the respiratory system?

- 1 Tar causes goblet cells to increase the secretion of mucus.
- 2 Tar increases the risk of blood clots forming inside blood vessels.
- 3 Tar may cause changes to the DNA in epithelial cells.

**A** 1, 2 and 3    **B** 1 and 2 only    **C** 1 and 3 only    **D** 2 and 3 only

1381. 9700\_w18\_qp\_12 Q: 35

Symptoms of chronic obstructive pulmonary disease (COPD) include a cough, breathlessness and chest infections.

Some of the changes in the lungs that result from smoking are listed.

- 1 Alveoli lose elastin and collapse.
- 2 Bacteria accumulate in the mucus.
- 3 Cilia are inactivated.
- 4 Goblet cells secrete more mucus.

Which changes cause the cough in COPD?

**A** 1, 2, 3 and 4    **B** 1 and 4 only    **C** 2 and 3 only    **D** 3 and 4 only

1382. 9700\_w18\_qp\_13 Q: 34

Chronic obstructive pulmonary disease (COPD) includes bronchitis and emphysema.

Which row shows the effects of bronchitis?

	T-helper cells	bronchioles	infection
<b>A</b>	destroyed	inflamed	absent
<b>B</b>	destroyed	narrowed	present
<b>C</b>	increased	scarred	present
<b>D</b>	increased	stiffened	absent



1383. 9700\_m17\_qp\_12 Q: 37

Which of these statements could describe the effect of carbon monoxide in cigarette smoke?

- 1 It binds irreversibly to haemoglobin.
- 2 It causes mucus to accumulate in the bronchioles.
- 3 It results in more carbon dioxide being transported in the blood.
- 4 It temporarily increases the heart rate.

**A** 1 and 2      **B** 1 only      **C** 2 and 3      **D** 3 and 4

1384. 9700\_s17\_qp\_12 Q: 32

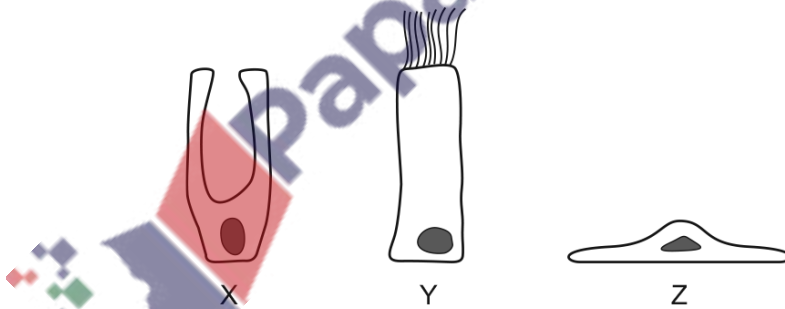
An athlete who smokes just before a race may not be able to run at their maximum speed because less oxygen is carried by the blood.

Which explanation is correct?

- A** Carbon dioxide binds to haemoglobin forming carbaminohaemoglobin.
- B** Carbon dioxide binds to haemoglobin forming carboxyhaemoglobin.
- C** Carbon monoxide binds to haemoglobin forming carbaminohaemoglobin.
- D** Carbon monoxide binds to haemoglobin forming carboxyhaemoglobin.

1385. 9700\_s17\_qp\_12 Q: 34

The diagram shows three types of cell found in the human gas exchange system.



Apart from causing cancer, which cell types will be directly affected when a person is exposed to tar in cigarette smoke?

**A** X, Y and Z      **B** X and Y only      **C** X and Z only      **D** Y and Z only

1386. 9700\_w17\_qp\_11 Q: 34

What are short-term effects of nicotine on the cardiovascular system?

- 1 constriction of small arteries
- 2 increase in heart rate
- 3 increase in blood pressure

**A** 1, 2 and 3    **B** 1 and 2 only    **C** 1 and 3 only    **D** 2 and 3 only

1387. 9700\_w17\_qp\_12 Q: 36

In which regions of the human gas exchange system is the function of some types of cell **directly** affected by tar in cigarette smoke?

- A** bronchioles and alveoli only
- B** trachea, bronchus, bronchioles, alveoli
- C** trachea and bronchus only
- D** trachea, bronchus and bronchioles only

1388. 9700\_w17\_qp\_13 Q: 36

Which flow diagram correctly describes the effect of tar entering the lungs?

- A** carcinogens come into contact with DNA → mutation occurs → uncontrolled cell division → mass of cells produced
- B** goblet cells secrete more mucus → mucus accumulates causing infection → phagocytes attracted by inflammation → causes irritation and coughing
- C** goblet cells secrete more mucus → mutation occurs → phagocytes attracted by inflammation → mass of cells produced
- D** phagocytes attracted by inflammation → mutation occurs → uncontrolled cell division → elastase destroys the alveolar walls

1389. 9700\_m16\_qp\_12 Q: 33

Some of the effects of smoking are listed.

- 1 It causes coughing.
- 2 It increases blood pressure.
- 3 It decreases the transport of oxygen.
- 4 It increases the risk of cancer.
- 5 It prevents cilia from moving.

Which components of tobacco smoke cause these effects?

	tar	carbon monoxide	nicotine
<b>A</b>	1, 3 and 4	2	4 and 5
<b>B</b>	1, 4 and 5	3	2
<b>C</b>	1 and 5	3 and 5	4
<b>D</b>	3 and 4	1, 2 and 5	2 and 4

1390. 9700\_s16\_qp\_11 Q: 36

Which short-term effects of smoking are caused by carbon monoxide?

- 1 formation of carboxyhaemoglobin
- 2 increased risk of blood clotting
- 3 narrowing the lumen of arteries

**A** 1 and 2      **B** 1 and 3      **C** 2 and 3      **D** 1 only

1391. 9700\_s16\_qp\_12 Q: 33

Which components of the human gas exchange system help to reduce the effects of carcinogens in tar?

- A** cilia and goblet cells only
- B** cilia and mucous glands only
- C** mucous glands and goblet cells only
- D** mucous glands, goblet cells and cilia

1392. 9700\_s16\_qp\_13 Q: 35

Which symptoms may be seen in a person affected by chronic obstructive pulmonary disease (COPD)?

- 1 persistent cough
- 2 less elastic alveoli
- 3 increased risk of lung infection
- 4 shortness of breath

- A** 1, 2, 3 and 4  
**B** 1, 2 and 3 only  
**C** 2, 3 and 4 only  
**D** 1 and 4 only

1393. 9700\_w16\_qp\_13 Q: 33

The table lists some of the effects of smoking.

Which row shows the effect of nicotine and carbon monoxide?

	nicotine	carbon monoxide
<b>A</b>	decreases heart rate	decreases blood pressure
<b>B</b>	increases blood flow to the feet	increases blood pressure
<b>C</b>	increases blood pressure	combines with haemoglobin
<b>D</b>	increases blood pressure	increases heart rate

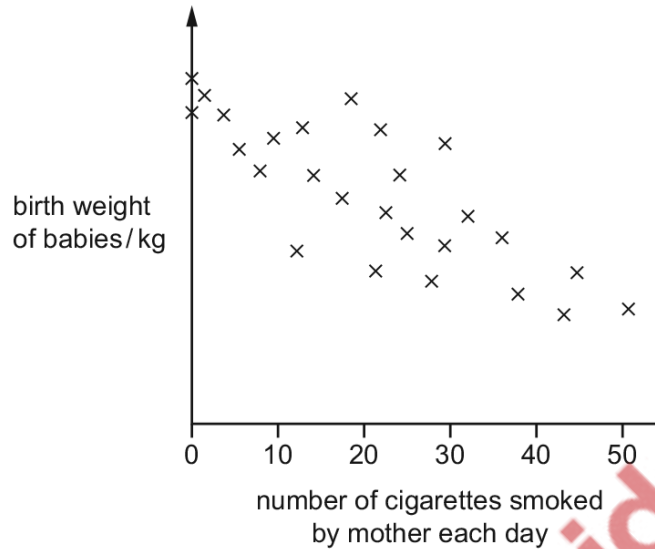
1394. 9700\_w16\_qp\_13 Q: 34

Which statement about chronic obstructive pulmonary disease (COPD) is correct?

- A** The disease can often be reversed by treatment.  
**B** The disease occurs in people of all ages.  
**C** The patient coughs a lot, bringing up mucus.  
**D** The patient's symptoms change over time.

1395. 9700\_s15\_qp\_11 Q: 32

The graph shows the results of a study to determine whether there is a link between the number of cigarettes smoked by a mother and the birth weight of her baby.



Which conclusions can be drawn from this graph?

- 1 As the number of cigarettes smoked increases, the weight of the baby always decreases.
- 2 Factors, other than smoking, affect the birth weight of a baby.
- 3 Nicotine, tar and carbon monoxide slow the growth of an unborn baby.
- 4 The majority of all smokers smoke between 10 and 35 cigarettes per day.

**A** 1, 2 and 3      **B** 2, 3 and 4      **C** 2 only      **D** 3 only

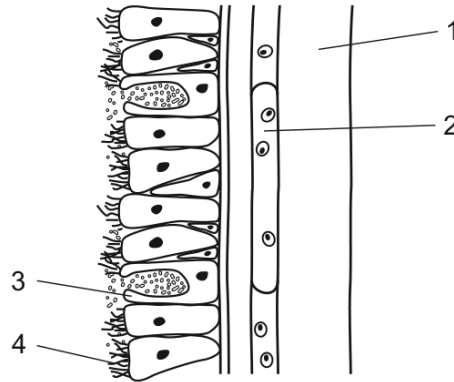
1396. 9700\_s15\_qp\_11 Q: 33

What is a feature of coronary bypass surgery?

- A** A section of a healthy vein or artery is attached to the aorta at one end and a coronary artery at the other end to bypass diseased sections of coronary artery.
- B** A section of healthy vein or artery is used to bypass the diseased section of aorta in the region where the branches to the coronary arteries occur.
- C** Blockages in coronary arteries with atherosclerosis are cleared surgically by temporarily using an artificial heart to re-route blood and bypass the heart.
- D** The section of diseased coronary artery is removed and then replaced by using a section of a healthy vein or artery of a similar diameter.

1397. 9700\_s15\_qp\_12 Q: 32

The diagram represents a section through the wall of a bronchus (not to scale).



In a person with chronic obstructive pulmonary disease (COPD), what happens in each of the numbered structures?

	1	2	3	4
<b>A</b>	contracts	contracts	inhibited	not affected
<b>B</b>	contracts	not affected	overactive	inhibited
<b>C</b>	relaxes	contracts	inhibited	paralysed
<b>D</b>	relaxes	not affected	overactive	overactive

1398. 9700\_s15\_qp\_12 Q: 33

The symptoms of two diseases are listed.

disease 1	disease 2
persistent cough	shortness of breath
pain when breathing	wheezing
loss of weight	fatigue

Which row identifies diseases 1 and 2?

	disease 1	disease 2
<b>A</b>	chronic bronchitis	emphysema
<b>B</b>	emphysema	lung cancer
<b>C</b>	lung cancer	chronic bronchitis
<b>D</b>	lung cancer	emphysema

1399. 9700\_s15\_qp\_13 Q: 31

Which row identifies the effects on the body of nicotine in tobacco smoke?

	reduces the diameter of small arteries (arterioles)	increases the secretion of adrenaline	combines with haemoglobin
<b>A</b>	✓	✓	✓
<b>B</b>	✓	✓	✗
<b>C</b>	✓	✗	✓
<b>D</b>	✗	✓	✓

key

✓ = true

✗ = false

1400. 9700\_s15\_qp\_13 Q: 32

Lung cancer and chronic obstructive pulmonary disease (COPD) share a number of common symptoms.

Which symptom is typical of lung cancer and not COPD?

- A** coughing up blood
- B** mucus production increases
- C** persistent cough that does not go away
- D** wheezing (difficulty breathing)

1401. 9700\_w15\_qp\_11 Q: 34

Some symptoms of chronic obstructive pulmonary disease (COPD) are listed.

- 1 bursting of alveoli
- 2 increase in secretion of mucus
- 3 loss of elastic fibres
- 4 narrowing of airways
- 5 reduction in surface area for gaseous exchange

Which of these are also the symptoms of emphysema?

- A** 1, 2 and 4
- B** 1, 3 and 5
- C** 2, 3 and 4
- D** 2, 4 and 5

1402. 9700\_w15\_qp\_12 Q: 32

Which of the effects are caused by breathing in **both** carbon monoxide **and** nicotine from cigarette smoke?

- 1 increased heart rate
- 2 increased risk of cardiovascular disease
- 3 increased risk of emphysema
- 4 increased risk of lung cancer

**A** 1, 2 and 3    **B** 2, 3 and 4    **C** 1 and 2 only    **D** 3 and 4 only

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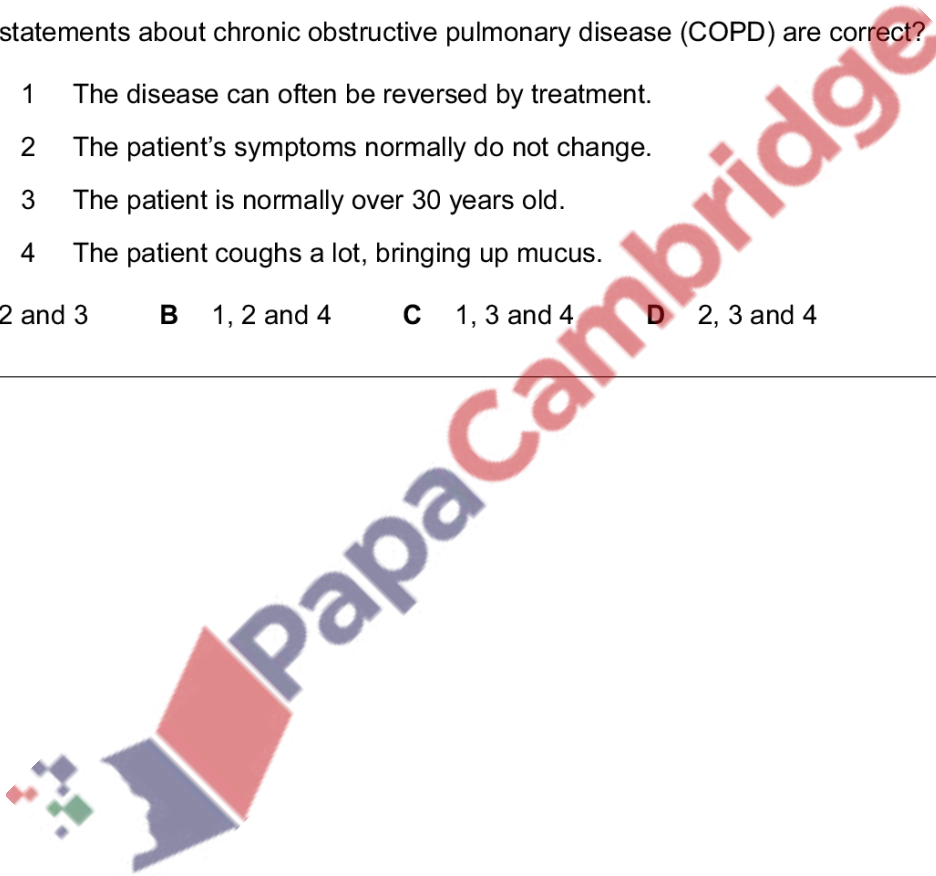
1403. 9700\_w15\_qp\_12 Q: 33

Which statements about chronic obstructive pulmonary disease (COPD) are correct?

- 1 The disease can often be reversed by treatment.
- 2 The patient's symptoms normally do not change.
- 3 The patient is normally over 30 years old.
- 4 The patient coughs a lot, bringing up mucus.

**A** 1, 2 and 3    **B** 1, 2 and 4    **C** 1, 3 and 4    **D** 2, 3 and 4

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