

1. Arteries contain elastic fibres.

Which of the following statements is / are true about the primary function of elastic fibres in artery walls?

**Statement 1:** contract to maintain high blood pressure.

**Statement 2:** recoil to maintain high blood pressure.

**Statement 3:** keep the blood moving away from the heart.

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

Your answer

[1]

2. Fig. 3.1 shows a thin section of human lung tissue as seen under medium power on a light microscope.

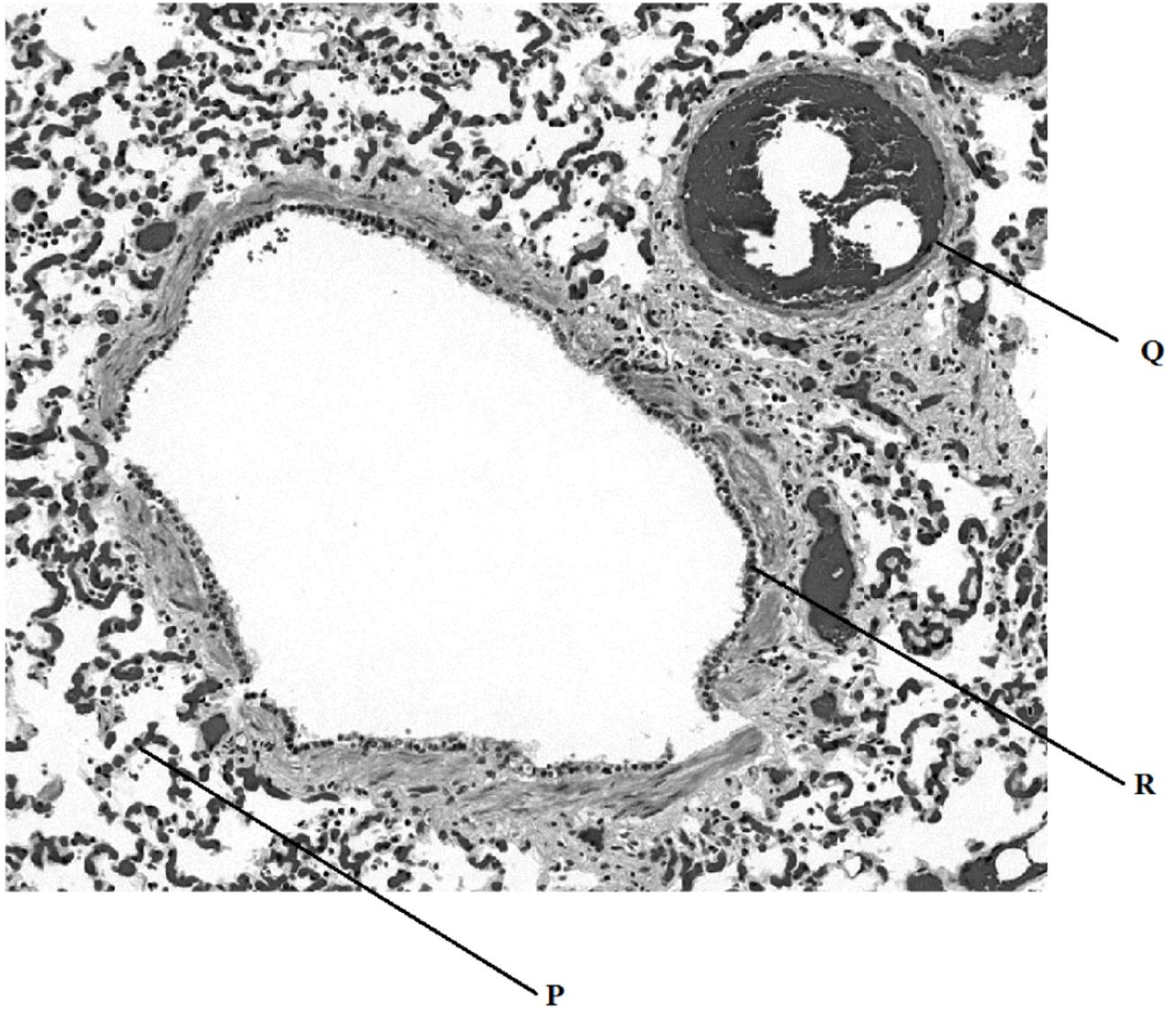


Fig. 3.1

Which of the following options correctly identifies P, Q and R?

	Ciliated epithelium	Endothelium	Squamous epithelium
A	R	P	Q
B	R	Q	P
C	Q	R	P
D	P	R	Q

Your answer

[1]

3. The following passage describes blood flow in mammals.

Blood flow through the circulatory system is contained in blood vessels. Each vessel type has a different structure, function and pressure. Exchange of materials takes place across \_\_\_\_\_ 1 \_\_\_\_\_. The pressure is lowest in the \_\_\_\_\_ 2 \_\_\_\_\_. The largest drop in pressure occurs in the \_\_\_\_\_ 3 \_\_\_\_\_ as resistance is greatest in these vessels. The \_\_\_\_\_ 4 \_\_\_\_\_ have the thickest layer of smooth muscle and elastic tissue.

Which words correctly complete the numbered spaces 1 to 4?

	1	2	3	4
A	venules	capillaries	veins	arteries
B	capillaries	veins	arterioles	arteries
C	veins	capillaries	venules	arterioles
D	capillaries	venules	arteries	arteries

Your answer

[1]

4. A 40 year old man has his blood pressure measured as part of a routine health check. It is measured at 170/105 mm Hg.

Which of the following best describes the interpretation of this reading?

- A high normal
- B hypertension requiring treatment
- C hypotension
- D mild hypertension

Your answer

[1]

5. Kwashiorkor is a disease that results from severe protein deficiency.

Which of the options, **A** to **D**, is a pressure decrease that causes an accumulation of tissue fluid in a person with kwashiorkor?

- A oncotic pressure of blood plasma
- B oncotic pressure of interstitial fluid
- C hydrostatic pressure of blood plasma
- D hydrostatic pressure of interstitial fluid

Your answer

[1]

6. The pressure of blood flowing through the heart changes during the cardiac cycle.

The table shows some values for the pressures in the chambers of the right side of the heart and the pulmonary artery.

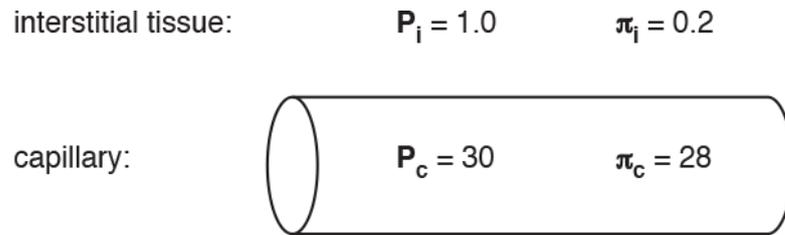
	Pressure in right atrium (mm Hg)	Pressure in right ventricle (mm Hg)	Pressure in pulmonary artery (mm Hg)
<b>A</b>	2	25	25
<b>B</b>	8	5	25
<b>C</b>	2	25	5
<b>D</b>	8	5	5

Which of the rows, **A** to **D**, is correct if the atrioventricular valve is open and the semilunar valve is closed?

Your answer

[1]

7. The diagram below represents a capillary (c) surrounded by interstitial tissue (i). Hydrostatic pressures (P) and oncotic pressures ( $\pi$ ) are shown.



The net movement of fluid between the capillary and interstitial tissue is determined by the net driving force (NDF):

$$\text{NDF} = (P_c - P_i) - (\pi_c - \pi_i)$$

When  $\text{NDF} > 0$ , fluid leaves the capillary.

When  $\text{NDF} < 0$ , fluid enters the capillary.

Which of the statements, A to D, is correct?

- A  $\text{NDF} = -1.7$ , favouring the production of tissue fluid
- B  $\text{NDF} = -1.7$ , favouring a loss of tissue fluid
- C  $\text{NDF} = 1.2$ , favouring the production of tissue fluid
- D  $\text{NDF} = 1.2$ , favouring a loss of tissue fluid

Your answer

[1]

8. The table below shows the mean blood pressure measurements for four patients.

	Mean blood pressures (mm Hg)	
	Systolic	Diastolic
Patient A	80	120
Patient B	100	190
Patient C	190	100
Patient D	80	50

Which of the patients, A to D, would be diagnosed with hypotension?

- A patient A
- B patient B
- C patient C
- D patient D

Your answer

[1]

9. The structure of blood vessels is related to their function.

Which of the blood vessels, A to D, has a wall consisting of only endothelial cells?

- A venule
- B vein
- C capillary
- D arteriole

Your answer

[1]

10. The table shows some of the properties of four types of blood vessel found in the human body.

Which of the blood vessels, A to D, is a vein?

Blood vessel	Lumen diameter (mm)	Wall thickness ( $\mu\text{m}$ )	Vascular blood pressure (mmHg)
A	0.02	1.0	50
B	0.008	0.5	20
C	5.0	500	5
D	4.0	1000	90

Your answer

[1]

11. A doctor takes a blood pressure measurement from a patient using a manual sphygmomanometer.

The result is  $\frac{160}{100}$  mm Hg.

Here are three statements about the doctor's examination:

- 1 The patient has hypertension that requires medical treatment.
- 2 The greatest pressure exerted on the patient's arterial walls during the cardiac cycle is 260 mm Hg.
- 3 At cuff pressures below 100 mm Hg, blood flow can be heard using a stethoscope.

Which of the statements is/are correct?

- A 1, 2 and 3 are correct
- B Only 1 and 2 are correct
- C Only 2 and 3 are correct
- D Only 1 is correct

Your answer

[1]

**END OF QUESTION PAPER**

### Mark Scheme

Question			Answer/Indicative content	Marks	Guidance
1			C	1	
			Total	1	
2			B	1	
			Total	1	
3			B	1	
			Total	1	
4			B	1	
			Total	1	
5			A	1	
			Total	1	
6			B	1	<p><b>Examiner's Comments</b></p> <p>This is another instance where the question should be read carefully with option B offering the only possible correct response.</p>
			Total	1	
7			C ✓	1	<p><b>Examiner's Comments</b></p> <p>The majority of candidates were able to use their mathematical skills well to identify the correct response.</p>
			Total	1	
8			D	1	<p><b>Examiner's Comments</b></p> <p>Candidates were required to correctly identify a blood pressure measurement which would show hypotension. The most common incorrect response was C which showed a hypertensive measurement.</p>
			Total	1	
9			C	1	<p><b>Examiner's Comments</b></p> <p>The majority of candidates chose the correct option for this question.</p>
			Total	1	

### Mark Scheme

Question			Answer/Indicative content	Marks	Guidance
10			C	1	<b><u>Examiner's Comments</u></b>  This question provided a different way of looking at the properties of blood vessels and many candidates were able to pick out the information and choose the correct option.
			<b>Total</b>	<b>1</b>	
11			D	1	
			<b>Total</b>	<b>1</b>	