

# A Level Biology : The Circulatory System

1. Small arteries (arterioles) are found near tissues. One function of an arteriole is to increase or decrease the flow of blood to the tissues. Which tissues would be present in an arteriole wall to allow this function?

1 collagen 2 elastic 3 muscle

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

2. One type of congenital heart defect is called atrial septal defect (ASD) where the left and right atria are not completely separated. ASD usually results in blood moving from the left atrium into the right atrium. This will cause increased blood pressure in the right atrium and decreased blood pressure in the left atrium. Which row describes the other effects of ASD on blood pressure and oxygenation ?

	blood pressure in pulmonary artery	blood pressure in aorta	% oxygenation of blood in pulmonary artery
<b>A</b>	decreased	increased	decreased
<b>B</b>	decreased	increased	increased
<b>C</b>	increased	decreased	decreased
<b>D</b>	increased	decreased	increased

- A) A
- B) B
- C) C
- D) D

3. What is correct for tissue fluid ?

	phagocytes	platelets	protein concentration compared to blood plasma
<b>A</b>	✓	✓	higher
<b>B</b>	x	x	higher
<b>C</b>	✓	x	lower
<b>D</b>	x	✓	lower

key

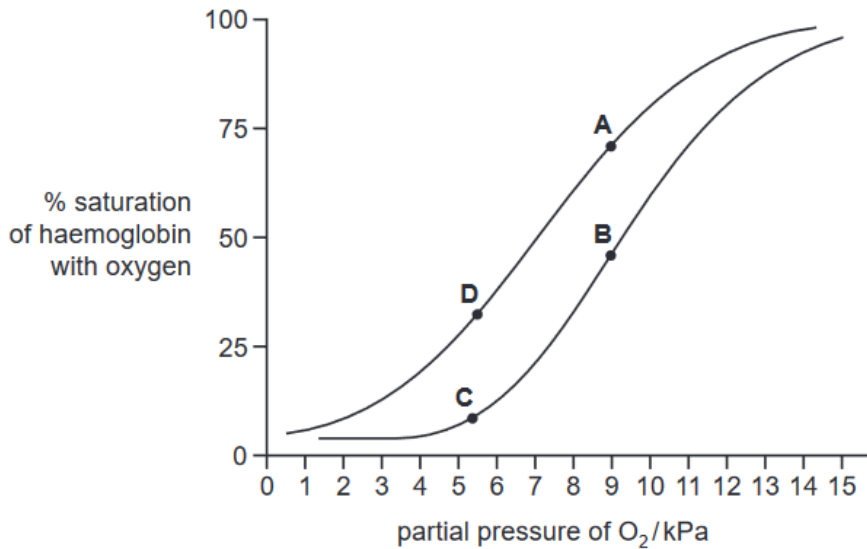
✓ = present

x = absent

- A) A
- B) B

- C) C
- D) D

4. The graph shows the dissociation curves for adult haemoglobin at two different (unidentified) concentrations of carbon dioxide. Which point represents the oxygen concentration in red blood cells as they leave a resting muscle ?



- A) A
- B) B
- C) C
- D) D

5. Which will **not** be formed in the plasma in capillaries surrounding active tissue ?

- A) carbaminohaemoglobin
- B) carbonic acid
- C) hydrogen carbonate
- D) hydrogen ions

6. Which statement correctly identifies a similarity between blood plasma and tissue fluid ?

- A) The blood plasma is under the same pressure as the tissue fluid.
- B) Protein is found in equal concentration in both blood plasma and tissue fluid.
- C) The water potential of the blood plasma and tissue fluid are equal.
- D) White blood cells are found in both blood plasma and tissue fluid.

**7.** The red blood cell count of humans increases when they remain at high altitudes. Why does this occur?

- 1 to increase the Bohr effect
- 2 to increase the diffusion gradient for oxygen in the lungs
- 3 to maintain transport of oxygen

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

**8.** Which two statements about the Bohr effect are correct?

- 1. Increasing the partial pressure of oxygen increases the percentage of oxyhaemoglobin.
- 2. Decreasing the partial pressure of carbon dioxide decreases the percentage of oxyhaemoglobin.
- 3. Increasing the partial pressure of carbon dioxide shifts the dissociation curve of haemoglobin to the left.
- 4. In low concentrations of carbon dioxide haemoglobin has a high affinity for oxygen.

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

**9.** 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

**10.** Why does the number of red blood cells in a human increase after several weeks at high altitude ?

- A) red blood cells are short-lived
- B) there is a high partial pressure of oxygen
- C) to remove glucose from the tissues
- D) to supply the tissues with enough oxygen

# Answer Keys

Question	Answer
1	D
2	D
3	C
4	D
5	A

Question	Answer
6	D
7	A
8	B
9	C
10	D