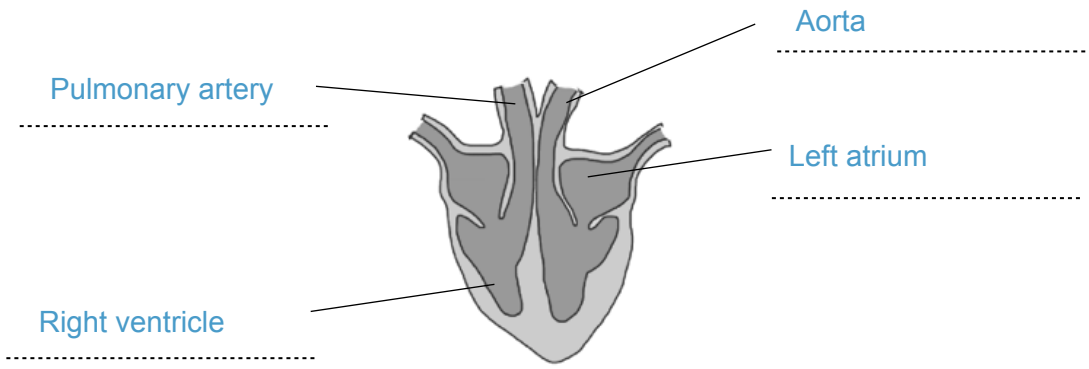
1 The diagram below shows the human heart.



1 (a) On the diagram, name the parts labelled.

(4 marks)

1 (a) (i) Explain how the blood is moved through the heart. In your answer, include how the direction of flow in maintained.

Blood enters the atria (through vena cava and pulmonary vein) [1 mark]

the atria contract [1 mark]

which pushes blood into the ventricles [1 mark]

Ventricles contract [1 mark]

which pushes blood out of the heart or out of the aorta and pulmonary artery [1 mark]

Valves stop blood from flowing backwards or in the wrong direction [1 mark]

(4 marks)

1 (b) The heart receives a supply of oxygen through arteries. These arteries can sometimes become narrowed. Narrowed arteries could cause a heart attack.

One method used to treat a narrowed artery is by using a stent.

1 (b) (i) Name the arteries that supply the heart.

Coronary arteries [1 mark]

(1 mark)

1 (b) (ii) Explain how treatment using a stent could prevent a heart attack.

Stent opens the (coronary) artery [1 mark]

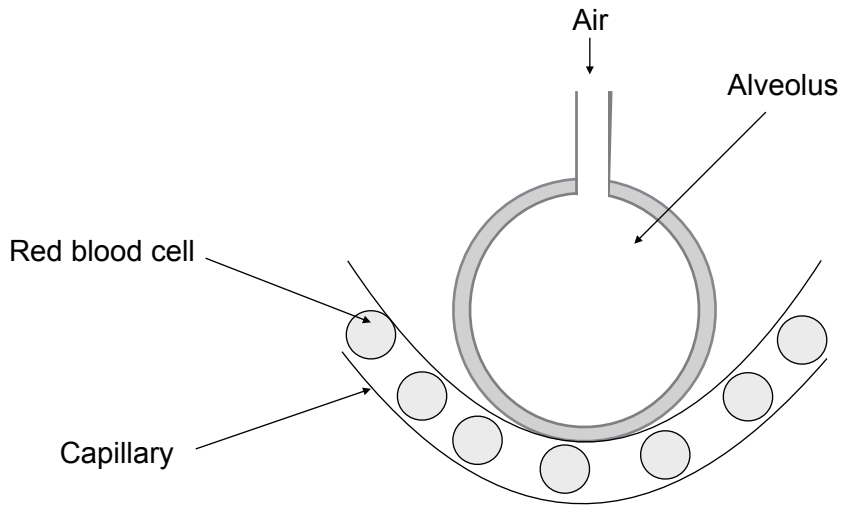
Allowing the blood to carry oxygen/glucose/nutrients to the heart (muscle) [1 mark]

(2 marks)

There are other ways to treat narrowed arteries including bypass operations, or taking statins or reducing the cholesterol intake. This question specifically asks about stents. The other answers would be valid if the question just asked about how to treat narrowed arteries.

(Total 11 marks)

2 The diagram shows a capillary next to an alveolus in the lungs.



2 (a) The average number of alveoli in each human lung is 280 million. The average surface area of 1 million alveoli is 0.25 m^2.

Calculate the total surface area of a human lung.

280 x 0.25 [1 mark]

Answer = 70 [1 mark] m^2

(2 marks)

2 (a) (i) Red blood cells transport oxygen.

Explain how oxygen is moved from the lungs to the tissues.

Oxygen combines with haemoglobin [1 mark]

To make oxyhaemoglobin [1 mark]

Oxygen/oxyhaemoglobin transported in blood/blood vessels/arteries [1 mark]

Oxyhaemoglobin releases oxygen in tissues or splits into oxygen and haemoglobin [1 mark]

(3 marks)

2 (a) (ii) Complete the table to show the function of the parts of blood.

(3 marks)

Part of blood	**Function**
Platelets [1 mark]	Helps to clot the blood
Plasma [1 mark]	Carries most of the carbon dioxide
Plasma [1 mark]	Carries dissolved food nutrients

(Total 8 marks)