

## Model Answers: Hard

Q1

The correct answer is **A** because

- Plasma is mainly water with many substances dissolved in it.
- Soluble nutrients such as glucose, amino acids and mineral ions, hormones, carbon dioxide, urea are all carried in plasma.

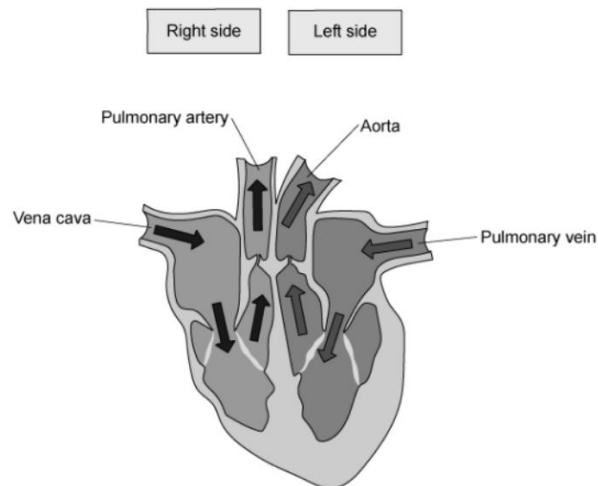
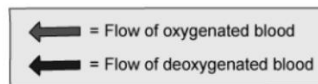
<b>B</b> is incorrect as	oxygen is transported by haemoglobin in red blood cells. Starch is a large, insoluble molecule that cannot be transported in the plasma (it does not dissolve in the water of blood plasma)
<b>C</b> is incorrect as	haemoglobin is the pigment found in red blood cells that binds reversibly to oxygen. Carbon dioxide is transported around the body dissolved in blood plasma.
<b>D</b> is incorrect as	oxygen is carried by haemoglobin in the red blood cells, not in the plasma. Carbon dioxide is transported around the body dissolved in blood plasma.

Q2

The correct answer is **B**

because:

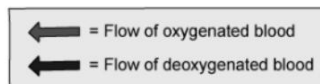
- The blood pressure in **veins** is always **lower** than the blood pressure in **arteries** (as blood is being transported back to the heart in the veins, and is no longer under direct influence of the heart beat).
- The **pulmonary vein** is the only vein in the body that transports **oxygenated** blood, as it's transporting blood that has picked up oxygen and lost carbon dioxide from the **lungs** back to the **heart**. This is a feature of the double circulatory system in mammals to ensure the respiring tissues of the body receive an efficient supply of oxygen.



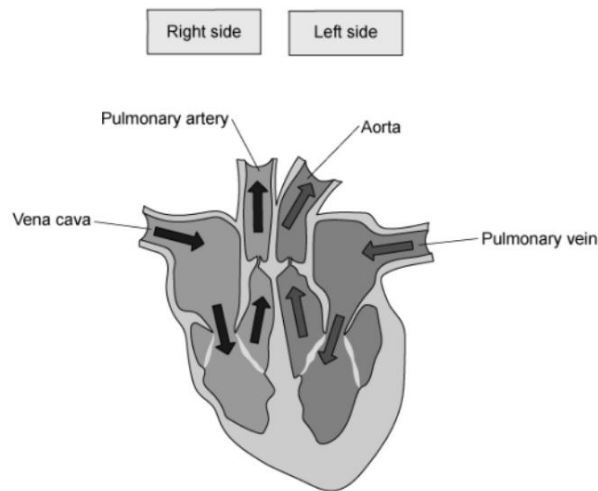
<b>A</b> is incorrect as	the pulmonary artery transports deoxygenated blood from the heart to the lungs for gas exchange.
<b>C</b> is incorrect as	the aorta transports oxygenated blood from the heart towards arteries that supply the tissues at high pressure.
<b>D</b> is incorrect as	the vena cava is the vein that returns deoxygenated blood from the body's tissues to the heart.

Q3

The correct answer is **C** because:



- The vena cava is the vein that returns deoxygenated blood from the body to the right atrium of the heart
- The pulmonary artery carries deoxygenated blood from the right ventricle to the lungs. It is the only artery of the body that carries deoxygenated blood.
- The renal vein carries deoxygenated blood from the kidneys back towards the heart (the renal vein joins the vena cava).



<b>A</b> is incorrect as	the aorta carries oxygenated blood from the left ventricle to the body, the pulmonary vein carries oxygenated blood from the lungs back to the heart and the renal artery carries oxygenated blood to the kidneys.
<b>B</b> is incorrect as	the pulmonary vein carries oxygenated blood from the lungs back to the left side of the heart (the only vein in the body which carries oxygenated blood).
<b>D</b> is incorrect as	the aorta and renal artery carry oxygenated blood.

Q4

The correct answer is **B** because:

- Stage **X** – blood enters the atria.
- Stage **Z** – the walls of the atria contract and blood moves into the ventricles.
- Stage **Y** – the walls of the ventricles contract and blood is pushed up into the arteries.
- Stage **W** – the arteries carry blood away from the heart and more blood is carried towards the heart in the veins.

Q5

The correct answer is **B**:

- When a blood vessel is broken/**damaged**, a series of reactions occur within the blood **plasma**.
- This results in an enzyme becoming activated which converts **soluble fibrinogen** (present in the blood plasma) into **insoluble fibrin**.
- Strands of insoluble fibrin trap red blood cells in a **mesh-like** structure which forms a **clot** over the damaged area.

**Key points:**

- **Soluble fibrinogen** is converted into **insoluble fibrinogen**.
- Remember when a molecule is **soluble**, it is able to **dissolve** in water. Insoluble molecules can not.

