# 8. Transport in mammals

**Starter Quiz ·**

A-Level Biology Name: _____ Score: _____

1. A ”closed double circulation” means that:

   ☐ blood stays in vessels and passes through the heart twice per circuit

   ☐ blood flows freely through body spaces

   ☐ there is only one loop

   ☐ blood passes through the heart once

2. The straw-coloured liquid part of blood, which carries the cells, is the _____.

   _____

3. Where the partial pressure of oxygen is high (the lungs), haemoglobin:

   ☐ cannot bind oxygen

   ☐ becomes almost fully saturated with oxygen

   ☐ releases all its oxygen

   ☐ breaks down

4. Most carbon dioxide is carried in the blood as _____ ions in the plasma.

   _____

5. Ventricles have thicker walls than atria because they:

   ☐ hold more blood cells

   ☐ only push blood a short distance down

   ☐ must pump blood out of the heart

   ☐ contain the pacemaker

6. The circulation that carries blood from the heart to the lungs and back is the _____ circulation.

   _____

7. The main job of a red blood cell is to:

   ☐ carry oxygen

   ☐ clot the blood

   ☐ make antibodies

   ☐ fight infection

8. In respiring tissues, where oxygen is low, haemoglobin:

☐ gains more oxygen

☐ unloads its oxygen for the cells to use

☐ turns into carbon dioxide

☐ becomes fully saturated

9. In the chloride shift, chloride ions move OUT of the red blood cell as hydrogencarbonate ions leave.

   ☐ True ☐ False

10. The thickest, most muscular chamber, which pumps blood around the whole body, is the left _____.

    _____

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**Answers ·**

A-Level Biology

1. **blood stays in vessels and passes through the heart twice per circuit**

   Closed = blood always in vessels; double = it passes through the heart twice (pulmonary then systemic).

2. **plasma**

   Plasma carries cells, dissolved nutrients, hormones and waste.

3. **becomes almost fully saturated with oxygen**

   At high oxygen partial pressure (lungs), haemoglobin loads up and becomes nearly fully saturated.

4. **hydrogencarbonate**

   Formed from $CO_2$ and water in the red blood cells, then carried in the plasma.

5. **must pump blood out of the heart**

   Atria only push blood into the ventricles below; ventricles pump blood out, so need thick muscular walls.

6. **pulmonary**

   Pulmonary = to the lungs; systemic = to the rest of the body.

7. **carry oxygen**

   Red blood cells are packed with haemoglobin to carry oxygen; white cells handle defence.

8. **unloads its oxygen for the cells to use**

   At low oxygen partial pressure (tissues), haemoglobin releases oxygen to the cells.

9. **False**

   False. As negative $HCO_3^-$ ions leave the red blood cell, negative chloride ions move in to balance the charge.

10. **ventricle**

    The left ventricle drives the systemic circulation (whole body), so it needs the most muscle.