



Ch-3 Releasing Energy

Lesson 3 Blood and circulation

Q1. How does heart work as a pump?

Ans. The heart works as two pumps. One pump pushes the blood towards the lungs and the other pushes blood to all other organs. The pump on the left side pushes blood to the body organs and this needs a greater force while the right side pushes it towards the lungs.

Q2. Write the function of valves in the heart.

Ans. The valves in the heart make sure that the flow of blood does not go backward. To push the blood out of the heart the thick walled ventricles contract strongly. The valves separating the chambers are automatically shut by the increasing pressure in the ventricles. So that blood cannot go back into the top chambers (atria).

Q4. What is pace maker?

Ans. The beating of the heart is controlled by the pacemaker. This is a group of cells in the right atrium. The pacemaker sends electrical messages to the heart muscles which stimulate the heart muscle to control.

Q3. Draw and label human double circulatory system.

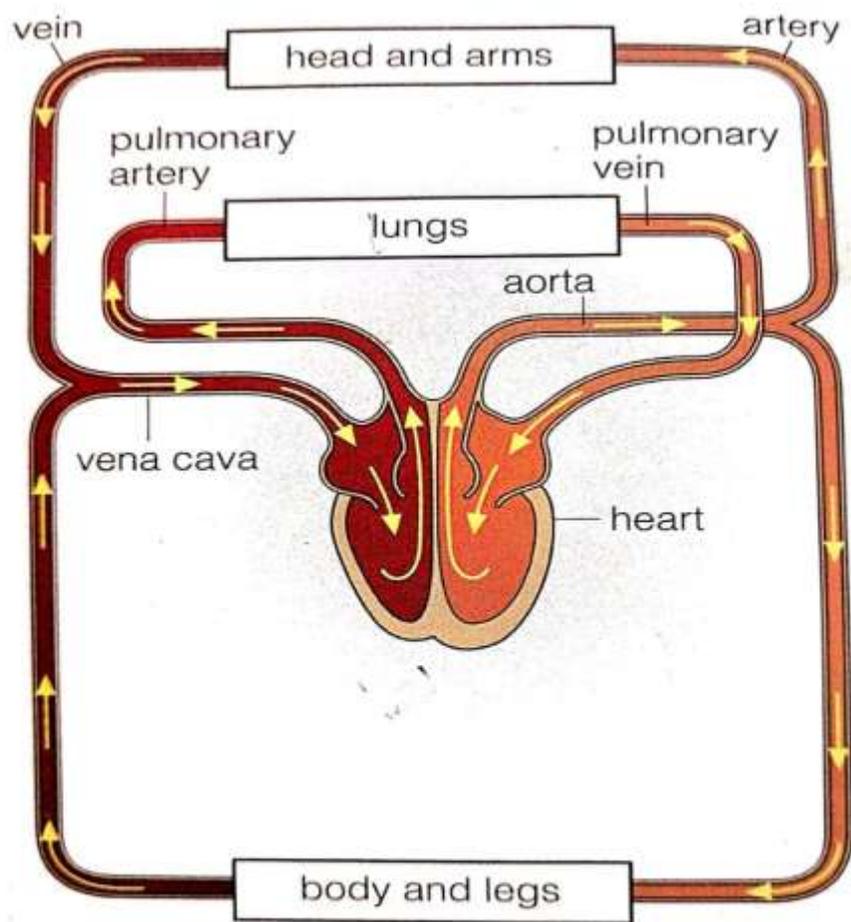


Figure 3.1 *The human double circulatory system.*

Q5. Define the following.

- **Haemoglobin:** It is a special protein that contain iron. It carries oxygen in the red blood cells. It gives the blood its red color.
- **Oxyhaemoglobin :** when haemoglobin carries oxygen , it is called oxyhaemoglobin.
- **Coronary artery:** The artery which supplies oxygenated blood (full of oxygen) to the heart muscle is called coronary artery.

Q6. Explain what is meant by double circulatory system.

Ans. The right side of our heart pumps blood to our lungs and then back to the heart again. In our lungs the blood picks up oxygen and become oxygenated.

The left side of our heart pumps blood to the rest of our body and then back to the heart again. The blood gives its oxygen to our body cells and become deoxygenated.

Q7.(a) Write the names of two types of white blood cells and describe their function.

Ans. The two kinds of white blood cells are

- **Lymphocytes:** They produce antibodies which attack and destroy the germs an produce the toxins which kill the germs which entered in the body.
- **Phagocytes:** These engulf the germs and take them into the cell. Then they digest and kill them.

(b) What is plasma?

Ans. The liquid part of the blood is called plasma. It is water with many substances dissolved in it. Plasma carries small molecules such as glucose, amino acids and vitamins from the diet as well as hormones and heat.

Q8. Explain the following conditions.

1. Heart attack 2. A stroke 3. Atheroma 4. Angina

- **Heart attack:** It is caused by the blockage in the coronary artery. As a result, the heart muscle does not get enough oxygen and glucose and it cannot beat properly. The blockage may be caused by a blood clot stuck in a narrow artery.
- **A stroke:** when any blood vessel of a brain is blocked by a blood clot, the result is a stroke. The person will become confused or unconscious.
- **Atheroma:** when we eat too much fatty foods, extra fats turns into cholesterol and stuck inside our arteries. This makes the arteries narrow and there are more chances of a blood clot to stuck inside the artery.
- **Angina:** It is the first sign of heart diseases with several of the arteries becoming narrow. A sharp pain develops in the left arm and the heart and the person gets tired much more quickly than they should.

Q9. Write differences between arteries and veins.

Arteries	Veins
Carry blood away from heart	Carry blood towards heart
Blood at high pressure	Blood at lowest pressure
No valves	Valves to stop blood flowing back
Thick muscular walls	Thinner walls with less muscles
No substances leave or enter vessel	No substance leave or enter vessel
Pulse created by heart pumping and contraction of wall muscle	No pulse
Strong walls	Flexible walls

Fill in the blank.

1. **Nicotine** from the cigarette smoke makes the blood more likely to form clots.
2. **Haemoglobin** combines with the oxygen and forms oxyhaemoglobin.
3. Arteries carry blood **away** from the heart, veins carry blood **back** to the heart.
4. The right ventricle pumps blood to the lungs through the **pulmonary artery.**
5. The left ventricle pumps blood to the rest of the body in the **aorta.**
6. Haemoglobin is a red **protein.**
7. Our heart has **four** chambers.
8. The chambers are separated by valves.
9. The right side of the heart pumps blood to the **lungs.**
10. **Capillaries** are the smallest blood vessels.