PART 5

IN HUMANS

CIRCULATORY SYSTEM

BIOLOGY I
TRANSPORT IN ANIMALS

Animals need a transport system to:

a) transport oxygen, glucose, hormones, etc.
b) distribute heat.
c) defend the body.
Blood Vessels

Blood flows around the body in tubes called BLOOD VESSELS. These vessels form a continuous system, communicating with every living part of the body. There are 3 types of Blood Vessel.

Look at the diagrams of the sections of a vein, a capillary and an artery.

<table>
<thead>
<tr>
<th>Arteries</th>
<th>Veins</th>
<th>Capillaries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carry blood from the heart</td>
<td>Carry blood to the heart</td>
<td>Connect and carry both oxygenated and deoxygenated blood</td>
</tr>
<tr>
<td>Have a layer of muscle</td>
<td>Have valves to stop the backflow of blood</td>
<td>Walls are very thin</td>
</tr>
<tr>
<td>Blood flows at high pressure due to the action of the heart</td>
<td>Space inside</td>
<td>Blood flows at low blood pressure and slow speed to allow exchange of materials</td>
</tr>
<tr>
<td>Space inside</td>
<td>Tiny vessels in close contact to cells</td>
<td></td>
</tr>
</tbody>
</table>

Complete the following table:
Blood passes from the cells to the cells.
Waste substances and other carbon dioxide, oxygen, digested foods and other tissue fluid drawn into capillary.

Vein

Artery

Tissue fluid leaks out.

Fluid leaks out.
[1] How can blood clotsing be prevented to prevent infection?

[1] Which part of the blood is responsible for carrying these waste products?

[2] Name two waste substances which are normally carried in the blood.

[3] Name three useful substances carried in the blood which would not be able to reach the liver.

[4] When part of the blood is responsible for carrying the clot?

Diagram: Capillaries in the liver. Artery supplying the blood supply to a part of the liver. A blood clot has completely blocked the artery, stopping the flow of blood to this part of the liver.
Diagram shows a blood capillary surrounded by body cells.

Water substance passing from the blood capillary into the body cells.
1. Which three types of blood vessels:

2. Which vein is the exception to the rule that veins carry deoxygenated blood.

3. Which artery is the exception to the rule that arteries carry oxygenated blood.

4. Why do veins contain valves? Why don't arteries need them?

5. At capillaries, the exchange of substances takes place. What substances?

6. What substances:
   (a) go into the blood
   (b) come out of the blood

7. Why do capillaries have very thin walls (one cell thick)?
   (a) come out of the blood
   (b) go into the blood

Blood Vessels
They are made in the bone marrow and they are involved in blood clotting.

These are not cells themselves, but small platelets. Platelets appear as tiny round or oval structures. They have no nucleus and are small.

White blood cells (Leucocytes)

Platelets (Thrombocytes)

White blood cells (Leucocytes)

They are made in the bone marrow.

White blood cells fight infection.

See Year 1, Work Later.

(c) Platelets (Thrombocytes)

(d) White Blood Cells (Leucocytes)

(e) White Blood Cells (Leucocytes)

(f) White Blood Cells (Leucocytes)

(g) White Blood Cells (Leucocytes)

(h) White Blood Cells (Leucocytes)

(i) White Blood Cells (Leucocytes)

(j) White Blood Cells (Leucocytes)

(k) White Blood Cells (Leucocytes)

(l) White Blood Cells (Leucocytes)

(m) White Blood Cells (Leucocytes)

(n) White Blood Cells (Leucocytes)

(o) White Blood Cells (Leucocytes)

(p) White Blood Cells (Leucocytes)

(q) White Blood Cells (Leucocytes)

(r) White Blood Cells (Leucocytes)

(s) White Blood Cells (Leucocytes)

(t) White Blood Cells (Leucocytes)

(u) White Blood Cells (Leucocytes)

(v) White Blood Cells (Leucocytes)

(w) White Blood Cells (Leucocytes)

(x) White Blood Cells (Leucocytes)

(y) White Blood Cells (Leucocytes)

(z) White Blood Cells (Leucocytes)

A red blood cell lasts about 4 months, after which it breaks down and is destroyed in the liver or spleen.

The red cells are made in the red bone marrow of some bones, e.g., sternum and ribs.

Haemoglobin contains Oxygen.

They have no nucleus. In their cytoplasm is a red pigment Haemoglobin which is a

Red Blood Cells (Erythrocytes)

Blood Cells (Corpuscles)
7. What is the ratio of red blood cells to white blood cells?

6. What are platelets?

5. What function do white blood cells perform?

4. What is haemoglobin?

3. What is unusual about red blood cells?

2. Where are the red blood cells made? Destroyed?

1. List 5 components of plasma.

Questions

1. The entry of harmful pathogens into the body.

2. The excess loss of blood when blood vessels are damaged.

Clothing prevents:

Clothing Action of the Blood
Complete the following diagram. Have TO LABEL FOR EXAM.
1. What is the function of X?

2. Name the structure at X.

3. Put an arrow in the structure labelled D to show the direction of blood flow.

4. Label A-E in the diagram below by using some of the followings:
   - Pulmonary vein
   - Atrium
   - Pulmonary artery
   - Aorta
   - Vena cava
   - Venule
   - Venticle
Questions

1. Describe the passage of blood through the heart (include all valves and chambers).

2. What is the function of valves?

3. a) Explain what heart disease is and how it occurs. (Use A4 paper)

b) Explain the function of the coronary arteries.

(Use thrombosis/stenosis/diabetes/stress/atherosclerosis)

(c) What happens if the coronary arteries get blocked with a blood clot?