UNIT 8 - BLOOD / LYMPHATIC / CARDIOVASCULAR SYSTEMS

WORKSHEET - The Blood

Name ___________________________________________  Period _________

1. List and describe the four components of blood.
   a.
   b.
   c.
   d.

2. In an adult, where are blood cells made? ______________________________

3. Describe the appearance of a mature erythrocyte and why this occurs.
   __________________________________________________________________
   __________________________________________________________________
   __________________________________________________________________

4. What two parts make up a hemoglobin molecule?
   a.
   b.

5. How are leukocytes classified?
   __________________________________________________________________

6. Plasma or Serum. Which one is whole blood minus cells and the clotting elements
   such as fibrinogen? ______________________________

7. What term refers to the stoppage of bleeding?
   ______________________________

8. List and describe the three steps associated with blood clotting.
   1. _________________________________________________________
   2. _________________________________________________________
   3. _________________________________________________________

9. What is the basic event in the creation of a blood clot?
   ______________________________
10. A ______________________ is a stationary blood clot while a _____________________ is a traveling clot.

11. The four blood types in humans are determined by the presence or absence of ___________________________ on the surface of the erythrocytes. ______________________ is another term for antigens and ___________________ is another term for antibodies.

12. Complete the following chart on blood types.

<table>
<thead>
<tr>
<th>Blood Type</th>
<th>Antigen</th>
<th>Antibody</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type AB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type O</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

13. What might be indicated by an excess of white blood cells in the blood?
______________________________________________________________________

14. What problems might you have if you had no platelets in your blood?
______________________________________________________________________

5. As you increase altitude, there is less oxygen in the air. How might this affect your blood?
______________________________________________________________________

______________________________________________________________________

16. How can blood clotting be bad for you?
______________________________________________________________________

17. What does Rh positive mean?
______________________________________________________________________

18. Type AB blood has often been called the universal recipient meaning a person with this blood type could receive a transfusion of any other blood type. Explain why this phrase is misleading.
______________________________________________________________________

______________________________________________________________________

______________________________________________________________________
WORKSHEET - The Blood: KEY

1. List and describe the four components of blood.
   a. **Plasma** - the fluid portion of blood
   b. **Erythrocytes** - the red blood cells used to carry oxygen and carbon dioxide
   c. **Leukocytes** - the white blood cells used to fight infection
   d. **Thrombocytes** - the platelets used to clot blood

2. In an adult, where are blood cells made? **The bone marrow**

3. Describe the appearance of a mature erythrocyte and why this occurs.
   A mature red blood cell looks like a biconcave disk. This is because it no longer has many of the normal cellular organelles such as a nucleus in order to make room for the hemoglobin molecule which is vital in transporting oxygen (and a little carbon dioxide).

4. What two parts make up a hemoglobin molecule?
   a. **Heme**
   b. **Globin**

5. How are leukocytes classified?
   As **granulocytes** or as **agranulocytes**, depending on whether or not there are granules in the cytoplasm.

6. Plasma or Serum. Which one is whole blood minus cells and the clotting elements such as fibrinogen? **Serum**

7. What term refers to the stoppage of bleeding? **Hemostasis**

8. List and describe the three steps associated with blood clotting.
   a. **The Vascular Spasm**
   This phase occurs when the arteriole or venule has been cut or broken and the smooth muscles contract in order to slow down or stop the flow of blood.

   1. **Platelet Plug Formation**
   This phase occurs when platelets stick to the exposed ends of the injured blood vessels

   c. **Coagulation**
   This is when the blood clot is actually formed. Due to the presence of calcium, blood clotting factors, and enzymes, a plasma protein, fibrinogen, is changed to fibrin. Fibrin forms actual fibers which hold the ends of the damaged blood vessels together forming a mass known as a clot.
9. What is the basic event in the creation of a blood clot?
   *The conversion of the plasma protein fibrinogen to fibrin.*

10. A *thrombus* is a stationary blood clot while an *embolus* is a traveling clot.

11. The four blood types in humans are determined by the presence or absence of *antigens* on the surface of the erythrocytes. *Agglutinogens* is another term for antigens and *agglutinins* is another term for antibodies.

12. Complete the following chart on blood types.

<table>
<thead>
<tr>
<th>Blood Type</th>
<th>Antigen</th>
<th>Antibody</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type A</td>
<td>A</td>
<td>Antibody anti-B</td>
</tr>
<tr>
<td>Type B</td>
<td>B</td>
<td>Antibody anti-A</td>
</tr>
<tr>
<td>Type AB</td>
<td>A and B</td>
<td><em>Neither Antibody anti-A or Antibody anti-B</em></td>
</tr>
<tr>
<td>Type O</td>
<td>None</td>
<td><em>Both Antibody anti-A or Antibody anti-B</em></td>
</tr>
</tbody>
</table>

13. What might be indicated by an excess of white blood cells in the blood?
   *Infection or cancer of the blood (leukemia)*

14. What problems might you have if you had no platelets in your blood?
   *Your blood would not be able to clot.*

15. As you increase altitude, there is less oxygen in the air. How might this affect your blood?
   *Your body would produce more red blood cells to be able to carry enough oxygen for your body's needs.*

16. How can blood clotting be bad for you?
   *When it occurs abnormally is blood vessels creating a thrombus which could obstruct the flow of blood to tissues and organs distal to is.*

17. What does Rh positive mean?
   *The person’s red blood cells have an additional antigen (protein D).*

18. Type AB blood has often been called the universal recipient meaning a person with this blood type could receive a transfusion of any other blood type. Explain why this phrase is misleading. *Giving the person Type A, Type B, or Type O blood would introduce antibodies into this person’s blood and a blood reaction could occur.*