1. Blood is a type of _____________ tissue and _____________ is the matrix.
   a. epithelial, plasma  
   b. epithelial, formed element  
   c. connective, plasma  
   d. connective, formed element  
   e. None of the above responses is correct.

2. Cindy was in an automobile accident, and injuries to her abdomen caused extensive damage to her liver. As a result, her blood is having difficulty transporting certain molecules in the plasma. Which one of the following molecules is likely to be affected?
   a. lipid  
   b. glucose  
   c. epinephrine  
   d. amino acid  
   e. Damage to the liver affects RBC’s, but it should not affect the plasma.

3. Joe is a 25-year-old male construction worker. Joe’s hematocrit is 48%. Given this information, which of the following statements is true?
   a. Joe’s red blood cell count is abnormally low.  
   b. Erythrocytes account for 48% of Joe’s formed elements.  
   c. Erythrocytes occupy about 48% of Joe’s whole blood.  
   d. Joe is suffering from some form of anemia.  
   e. None of the responses above is correct.

4. Which of the following cells lacks a nucleus and is normally found in the bone marrow?
   a. hemocytoblast  
   b. lymphoid stem cell  
   c. erythroblast  
   d. reticulocyte  
   e. None of the responses above is correct.

5. Which one of the following molecules typically does NOT contain iron atoms?
   a. bilirubin  
   b. ferritin  
   c. heme  
   d. hemosiderin

6. Sean just spent two months training to run a marathon. During his training time he lived in Denver, Colorado, where the altitude is over 5,000 feet. At the end of his training period, Sean’s physician did a blood test on Sean, but the physician mixed up Sean’s results with four other patients. Which set of the results below is most likely Sean’s?
   a. hematocrit 45%; hemoglobin 14 g/dl; leukocytes 7500 per mm$^3$  
   b. hematocrit 58%; hemoglobin 21 g/dl; leukocytes 7300 per mm$^3$  
   c. hematocrit 39%; hemoglobin 12 g/dl; leukocytes 7600 per mm$^3$  
   d. hematocrit 56%; hemoglobin 12 g/dl; leukocytes 7250 per mm$^3$  
   e. hematocrit 40%; hemoglobin 22 g/dl; leukocytes 7400 per mm$^3$
7. Which type of leukocyte is most abundant in normal blood?
   a. basophil
   b. eosinophil
   c. lymphocyte
   d. monocyte
   e. neutrophil

8. Which type of leukocyte is best adapted to fighting multicellular parasites?
   a. basophil
   b. eosinophil
   c. lymphocyte
   d. monocyte
   e. neutrophil

9. Janice, a 26-year-old woman, has a CBC with differential white count performed on her blood. The results are shown below:
   
<table>
<thead>
<tr>
<th>Leukocyte</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutrophils</td>
<td>10,000</td>
</tr>
<tr>
<td>Eosinophils</td>
<td>395</td>
</tr>
<tr>
<td>Basophils</td>
<td>975</td>
</tr>
<tr>
<td>Lymphocytes</td>
<td>3,000</td>
</tr>
<tr>
<td>Monocytes</td>
<td>1,200</td>
</tr>
</tbody>
</table>

   Test results also show high levels of a particular chemical in Janice’s blood. Which one of the following chemicals is most likely at abnormally high levels in Janice’s blood?
   a. fibrinogen
   b. platelet-derived growth factor
   c. histamine
   d. calcium
   e. All of the chemicals given above should be at abnormally high levels.

10. Which one of the following is NOT a function of platelets?
    a. produce fibrinogen at the site of injury
    b. formation of a temporary patch at the site of injury
    c. release various clotting factors to promote clot formation
    d. release calcium ions to promote clot formation
    e. contract the blood vessel at the site of injury

11. _________________ are involved in the production of erythrocytes, leukocytes (all five types), and platelets.
    a. Myeloid stem cells
    b. Megakaryocytes
    c. Monoblasts
    d. Erythroblasts
    e. Hemocytoblasts
12. A chemical that inhibits contractions of cells in the tunica media
   a. will directly inhibit the coagulation phase of hemostasis.
   b. will directly inhibit the platelet phase of hemostasis.
   c. will directly inhibit the vascular phase of hemostasis.
   d. will have no effect on hemostasis.

13. The natural process of breaking up a blood clot is called
   a. fibrinolysis.
   b. hemolysis.
   c. thrombolysis.
   d. hemophilia.

14. The heart is found within
   a. the mediastinum.
   b. the thoracic cavity.
   c. the pericardial cavity.
   d. All of the responses above are correct.
   e. None of the responses above is correct.

15. Pericardial fluid is found between
   a. the fibrous pericardium and the parietal pericardium.
   b. the visceral pericardium and the endocardium.
   c. the visceral pericardium and the epicardium.
   d. the epicardium and the parietal pericardium.
   e. None of the responses above is correct.

16. Which one of the following layers keeps a consistent shape as the heart beats?
   a. endocardium
   b. myocardium
   c. epicardium
   d. visceral pericardium
   e. fibrous pericardium

17. Consider a drop of blood in the aorta. Which heart valve will be the next one it passes through?
   a. aortic semilunar
   b. bicuspid
   c. pulmonary semilunar
   d. tricuspid

18. Arteries of the pulmonary circulation
   a. contain deoxygenated blood.
   b. contain oxygenated blood.
   c. may carry either deoxygenated or oxygenated blood.
19. Which one of the following definitions best describes the word “ischemia”?
   a. Blockage of a coronary artery.
   b. The absence of oxygen.
   c. A local decrease in blood supply.
   d. A decrease in the supply of oxygen.
   e. Pain in the chest.

20. Compared to skeletal muscle fibers, cardiac muscle cells have a rather long refractory period.
   a. This allows the heart to beat rapidly to increase cardiac output.
   b. This is responsible for delaying the conduction of electricity from the atria to the ventricles.
   c. This prevents the heart from entering tetanus.
   d. This allows action potentials to spread rapidly from the SA node to the atria.
   e. All of the responses above are correct.

21. The AV node conducts electricity at a slower speed than other parts of the heart’s conducting system. The result is that
   a. excitation of the ventricles occurs about a tenth of a second after excitation of the atria.
   b. the left ventricle is able to contract with more force than the right ventricle.
   c. the left ventricle contracts a fraction of a second after the right ventricle.
   d. the AV node is able to act as the pacemaker for the heart.

22. Blockage of one of the coronary arteries that provides blood to the AV node may result in which one of the following conditions?
   a. an ectopic focus
   b. aortic stenosis
   c. mitral valve prolapse
   d. premature ventricular contractions
   e. heart block

23. The spread of depolarization across the ventricles generates the ______________ in an EKG.
   a. P wave
   b. QRS complex
   c. T wave

24. The delay between the P wave and the QRS complex is caused by
   a. the AV node.
   b. the Purkinje fibers.
   c. an ectopic focus.
   d. atrial repolarization.
   e. None of the responses above is correct.

25. Ventricular systole begins
   a. shortly before the P wave begins.
   b. shortly after the P wave begins.
   c. shortly before the QRS complex begins.
   d. shortly after the QRS complex begins.
   e. shortly after the T wave begins.
26. During ventricular filling
   a. the entire heart is in systole.
   b. most of the blood that enters the ventricles is actively pumped in by the atria.
   c. all four valves are open.
   d. pressure in the ventricles is higher than pressure in the atria.
   e. None of the responses above is correct.

27. During isovolumetric relaxation
   a. semilunar valves open as pressure in the aorta and pulmonary trunk exceeds the pressure in the ventricles.
   b. all four valves remain closed until pressure in the ventricles drops below the pressure in the atria.
   c. blood flows from the ventricles into the aorta and pulmonary trunk.
   d. blood flows from the atria into the ventricles.
   e. None of the responses above is correct.

28. George’s heart rate is 60 beats per minute, his EDV is 120 ml, and his ESV is 50 ml. What is George’s cardiac output?
   a. 3000 ml per minute
   b. 4200 ml per minute
   c. 7200 ml per minute
   d. 10,200 ml per minute
   e. None of the responses above is correct.