1. If the test tubes represented in the diagrams below were allowed to stand at room temperature for several hours, which test tube would most likely contain the greatest amount of alcohol and carbon dioxide?

2. The number of chambers in the human heart is
   (1) 1  
   (2) 2  
   (3) 3  
   (4) 4

3. Blood pressure results from
   (1) contractions of the heart muscle
   (2) relaxation of the heart muscle
   (3) backflow of blood
   (4) the action of valves

Base your answers to questions 4 through 6 on the equation below and on your knowledge of biology

4. The type of reaction represented by this equation is called
   (1) hydrolysis  
   (2) carbon fixation  
   (3) glycolysis  
   (4) dehydration synthesis

5. This reaction occurs during the process of
   (1) protein synthesis  
   (2) aerobic respiration  
   (3) photosynthesis  
   (4) digestion of carbohydrates

6. The products of this reaction are
   (1) lipids  
   (2) amino acids  
   (3) peptides  
   (4) monosaccharides
A laboratory investigation was performed to determine the effect of temperature on the rate of action of an enzyme. Ten grams of chopped hard-boiled egg white was placed into each of six identical test tubes. The test tubes were then filled with a dilute solution of gastric protease and hydrochloric acid. The tubes were stoppered, and each was placed in an environment at a different constant temperature and mechanically agitated for one hour. At the end of that time, the egg white remaining in each tube was filtered out and dried, and its mass was measured. The percentage of egg white digested was then calculated. The observations and results of calculations are shown in the data table below.

<table>
<thead>
<tr>
<th>Temperature (in °C)</th>
<th>Mass of Undigested Egg White (in grams)</th>
<th>Percentage of Egg White Digested</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>9.5</td>
<td>5</td>
</tr>
<tr>
<td>15</td>
<td>7.0</td>
<td>30</td>
</tr>
<tr>
<td>25</td>
<td>5.0</td>
<td>50</td>
</tr>
<tr>
<td>35</td>
<td>4.0</td>
<td>60</td>
</tr>
<tr>
<td>45</td>
<td>7.5</td>
<td>25</td>
</tr>
<tr>
<td>55</td>
<td>10.0</td>
<td>0</td>
</tr>
</tbody>
</table>

7. On the grid provided place an appropriate scale and label each axis to create a graph of the relationship between percentage of egg white digested and temperature. [2]

8. Plot the data and connect the points.

9. The results of this experiment indicate that gastric protease digests protein (egg white) most rapidly at a temperature of
   (1) 50 °C
   (2) 250 °C
   (3) 350 °C
   (4) 450 °C or higher

10. Normal human body temperature is 370 °C. The results of this experiment indicate that when body temperature rises above normal, the rate of protein digestion probably
    (1) increases
    (2) decreases
    (3) fluctuates widely
    (4) is not affected
11. Compared to the diastolic blood pressure (during relaxation of the heart), the systolic pressure (during contraction of the heart) is
(1) always lower  (2) always higher
(3) usually the same  (4) at first higher, then lower

12. The diagram below represents an enzyme-catalyzed reaction. Which substance is indicated by the letter X?
(1) maltase  (2) sucrase
(3) lipase  (4) protease

13. A student's blood pressure measures 116/70. The number "116" or systolic number refers to the amount of blood pressure exerted on the walls of the student's
(1) veins  (2) lymph glands
(3) capillaries  (4) arteries

14. The thin-walled vessels of the circulatory system where most oxygen and carbon dioxide are exchanged are
(1) alveoli  (2) arteries
(3) capillaries  (4) veins

15. Small lymphatic vessels which extend into the villi are
(1) veins  (2) lacteals
(3) nodes  (4) capillaries

Base your answers for questions 16 through 19 on the diagram of the human circulatory system and on your knowledge of biology. For each statement, write the number from the diagram which is most closely related to it.

16. Carbon dioxide enters the circulatory system.
17. Oxygen enters the circulatory system.
18. Amino acids enter the circulatory system.
19. A vein carries oxygenated blood.