

Chapter 8, Part 1.

1. Air contains gases such as _____, _____, _____, and _____. Air may contain _____ particles such as _____ or _____, and _____ like automobile exhaust.

2. Your _____ system contains all of the organs and tissues that move _____ in and out of your body. This process is called _____, inhaling or exhaling. Your body uses the oxygen to release _____ stored in food such as _____. Asleep or awake, your cells use this _____ energy to make your body work.

3. The process by which your cells use oxygen to release energy from food is called _____. Write a word equation below for *Cellular Respiration* in living cells:
_____.

4. Three _____ are formed during cellular respiration: _____. Excess, waste, or unused products of cellular respiration are removed by _____. One place is through the _____ in the air which you breathe out. Also _____. Another by product is _____ which is toxic to cells and must be removed quickly.

5. When you are very active, your muscle cells use more _____ in order to release more chemical energy. This results in cells producing more carbon dioxide which enters the _____. The amount of carbon dioxide in the blood tells your nervous system how _____ you need to breathe. The number of times you breathe in a minute is called the _____.

6. Briefly explain how your body determines how fast you need to breathe?

Part 2.

7. Your _____ are spongy organs are made up of clusters of tiny hollow sacs called _____. The alveolus are surrounded by blood _____ and the lungs are located in the large sealed space called the _____. The walls of the chest cavity are supported by ribs and _____ called the _____. At the very bottom of the chest cavity is a dome-shaped muscle called the _____.

8. Refer to Figure 8.8 on page 156 of your text book. Briefly describe the process of breathing:

9. Under normal circumstances, your lungs will not collapse during respiration. The outsides of the lungs are held tightly to the _____ of the chest cavity by a _____ that coats the surface of the lungs. It acts as a surprisingly strong bond or _____.

10. Read the *Science of Underwater Diving* on page 158 of your text book. What are the *Bends*?

Part 3.

11. Each breath enters your body through the _____ or _____. Breathing through your nose has certain advantages over using your mouth. Your _____ is located within your nose, and the air you breathe is _____, _____, and _____ before it reaches the lungs.

12. Air enters via the _____ and into the hollow spaces called the _____. Tiny hairs remove large particles like _____ or ash. Air then passes into the throat which divides into the esophagus and _____. The entrance to the trachea is covered by a fleshy flap of tissue called the _____ which helps prevent choking.

13. Along the length of the trachea you can feel a series of ridges made of a bone-like material called _____. These rings hold the trachea open so you can breath and will not suffocate. As the air travels, very small particles such as pollen are still being cleaned by sticky _____ lining the passage ways. These passages also have hail-like projections called _____.

14. Trapped particles are moved toward the _____ and _____ to be coughed or sneezed away, or _____ and digested. The lungs require _____ and _____ in order to survive. The nasal cavity and trachea have many blood vessels to warm the air and mucus to moisten it.

15. After the trachea enters the chest cavity it branches into two tubes called the _____. The bronchi carry air into the _____. Here the air travels into smaller and smaller tubes called _____ where blood gases are exchanged. Each alveoli is like a tiny balloon filled with air and surrounded by _____.

16. Blood comes from all over the body. When it arrives, it is low in _____ and high in _____. This is because cellular _____ in the

- individual body cells has used up the oxygen and then produces carbon dioxide as a waste gas.
17. The air you breath is rich in oxygen, it eventually fills the _____ and by diffusion the oxygen moves into the _____. At the same time, _____ diffuses from the blood and back into the air inside the alveoli. The blood flowing _____ from the lungs has a _____ supply of oxygen for the cells. The air inside the lungs is exhaled.
 18. Consider Figure 8.13 showing the exchange of gases. This takes place at all times, even at rest!
 19. The amount of air you inhale in a breath changes with _____ you inhale. This varies, but is usually about _____ of air. The largest amount of air you can move in or out of your lungs in one breath is called your _____. The vital capacity is a _____ of volume and varies between people. Usually it is about _____.
 20. Vital capacity is a good indicator of how well the _____ system is working and how _____ your body is. Fit people have a larger capacity than do unfit or smoking people. Exhaling does not take any effort because your lungs, rib cage, and diaphragm are _____ and automatically _____ to their former size and shape after being expanded.
 21. However, you can force air out if you sneeze or want to blow up a balloon for example. Not all of the air in your lungs is expelled as you breathe out. If it did, your _____ would collapse. About _____ is leftover and this is called _____ or dead air.

Part 4.

22. Caring for your _____ system has two parts: _____ and _____. As with other muscles, it benefits from exercise and conditioning. This makes breathing _____ and more _____ so that you can move more air in and out of your system. Protecting your respiratory system is important. Inhaling harmful, toxic substances can damage your lungs.
23. _____ is one of those substances and it just doesn't harm the minority of people you smoke. _____ is unfiltered and may be inhaled by others. The exhaled smoke from cigarettes contains harmful substances. Hot gases cool and condense, leaving toxic _____ which contain chemicals that cause the protective cilia from moving.
24. If the cilia stop their cleaning action and are killed over time, sticky material becomes _____ and in the air passages. This builds up and damage to the respiratory system causes nasty coughs. The chemical _____ comes from smoke and enters the blood stream signalling the brain to make the _____ work harder. This may lead to a _____.
25. Describe the effects of cigarette smoking on your body:

26. Explain some of the medical diseases associated with smoking & effects of second-hand smoke?

Chapter 7, Part 5.

27. The movement of blood throughout the body provides a _____ system which carries _____ and _____ to each cell and takes away _____. Blood is an unusual tissue because it _____ through your body. Men can have about _____ of blood in them and women may have between _____. It is carried all over in small tubes called _____. Your heart pumps the blood to keep it circulating and together the entire thing is called the _____.
28. All body processes and functions require the presence of blood. Blood carries nutrients, oxygen, wastes, carbon dioxide, and energy to and from all the body cells. Blood can be _____ into two parts. A _____ part and a _____ part. The solid part consists mostly of tiny _____. The liquid part is _____ and _____ and is called _____.
29. Plasma consists of _____ water and _____ solids dissolved in water. List the solid parts:
30. Blood contains _____ which are essential for life. Describe the three below:
31. Solid blood mater mostly consists of _____ whose function is to carry oxygen . Red blood cells contain _____ which is a molecule which hooks up to oxygen when there is a _____ concentration of it, and lets go of oxygen in areas of _____ oxygen concentrations. Your body can not make hemoglobin without _____.
32. All growing teenagers and females require iron as a part of their diet in order to meet the needs of growth and repair. In adults, most of the iron is _____ when red blood cells die.

Each RBC lives for about _____ days, new cells are constantly being made inside your _____.

33. Old red blood cells are taken to the _____ and the hemoglobin is recycled into _____. The bile is then used by the _____ in order to digest _____. The iron is split away from the hemoglobin and recycled into new red blood cells.
34. _____ have a very different function from the RBC's. They _____ against bacteria and other harmful substances which may enter your body. The WBC's are a part of the _____ system. There are different types of WBC's that are made in various parts of the body such as inside the _____, _____, and _____.
35. _____ look like tiny flat bags that float throughout the blood system. They _____ wherever the walls of _____ vessels are damaged. There, they cling together and release chemicals creating clot-forming blood _____ to form a _____.

Part 6.

36. There are _____ main types of blood vessels. Blood vessels which carry blood away from the heart are called _____. These have _____, muscular walls. The vessels returning blood to the heart are called _____. Both are connected together in a system of tiny blood vessels called _____ which reach the individual cells.
37. As the heart contracts it sends a burst of blood through the _____. Blood can not flow backwards in these vessels because of _____ or flaps which prevent flow in the opposite direction. Each contraction of the heart is called a _____.
38. The rhythm of surging blood in the system is called a _____, the pulse is an important measure of a person's _____, the number of heart beats per minute. The muscular walls of the arteries _____ and, in turn, help propel blood along. Their walls are too thick to allow oxygen and _____ to pass through. This happens at the _____.
39. Blood from the capillaries begins its journey through _____ and back to the heart. The walls of veins are _____ and stretch when they are full of blood. Unlike arteries, veins are not muscular and can not _____ blood along. The return trip is accomplished with the help of large body _____. As the muscles, contract it squeezes the blood along the vein and back to the heart. Back flow is prevent, once again, by valves! See Figure 9.6.
40. Compare the arteries and veins in Figures 9.4. View Figure 9.5 and answer the question it poses:
41. The flow and direction of blood through out the body is controlled by whether or not it carries oxygen & nutrients, or carbon dioxide & waste. Blood supply from the lungs is rich in oxygen, thus it is called _____. It travels the _____ side of the heart and is pumped into _____ arteries. This travels the body and to the capillaries at the cellular level. It then releases _____ and picks up _____.
42. Now the blood is oxygen poor, thus it is called _____ and travels

- the _____ side of the heart through the veins. The heart sends this blood to the _____ and repeats the process, never allowing the two types of blood to mix and keeping it separate.
43. Along with carrying gases, nutrients, and wastes about the body, blood also transports _____ energy throughout the body to help keep others cells warm. The body constantly produces its own heat energy through chemical reactions such as _____. This warmth is passed along and is regulated by the blood circulation system and all of the capillaries.

Part 7.

44. The heart is mostly made up of _____ whose job it is to keep blood flowing through the circulatory system. A healthy heart normally beats _____ a minute. Heart muscle is called _____ muscle. View Figure 9.12 on page 180 of your text book.
45. The heart contains _____ compartments or chambers. The movement of blood in or out of these chambers is controlled by _____ which act like doors opening only in one direction. The _____ are the two chambers at the _____ of the heart. They are called the _____ and _____ atrium. The right and left _____ are the two chambers at the bottom of your heart.
49. Explain the different contractions of cardiac muscle that cause the heart to pump blood:
50. Describe the various steps which show the direction and flow of blood through the heart:
51. The heart itself must have its own supply of oxygen and nutrients, as well as the ability to carry away waste products. It does so by its own system of _____. Your _____ does not stay exactly the same for long. It is controlled automatically by the _____ system. During exercise, the heart rate _____ to provide an increased supply of oxygenated blood and to remove deoxygenated blood.
52. At rest, the heart beats more _____ and _____, resting itself. As with any other muscle, it needs regular exercise to stay fit and healthy. Not smoking prolongs its life!

Part 8.

53. The main illnesses of the circulatory system are _____, _____, and _____. A _____ occurs when the cells of the heart do not receive enough _____. If the heart's own arteries are _____, then blood can not reach the cardiac muscle cells cutting off essential oxygen and nutrients. If this happens for too long, these cells no longer work and begin to _____. Some heart attacks are mild and others are _____ depending on how much muscle tissue is damaged.
54. Heart muscle can _____ itself over time and with rest. It is important to get rid of the causes of heart attack and smoking is one of them. The _____ from cigarettes causes the heart to beat unusually _____ and closes up certain vessels creating stress. _____ effects the blood vessels, especially the _____. Too much _____ and _____ stick to the inner surface of the arteries. This makes blood flow difficult and may even _____ an artery and cause a heart attack!
55. _____ is a measure of how hard the heart must exert to pump blood through your arteries. When the heart rate increases, it also _____ the blood pressure. When you relax the blood pressure decreases. Generally, _____ blood pressure and the more quickly it returns to normal is better for a healthy heart. _____ is the leading cause contributing to heart attack and may as a result of _____.
56. What personal choices do you think would affect the health of your own heart?

Part 9.

57. There is a constant _____ act taking place in your body. The _____ and _____ system act as the blood's "traffic controllers". The liver filters every substance which passing through your blood. Describe some of the functions of the liver:
58. _____ is the process of removing excess water, _____, and wastes from the body. The _____ system includes the _____, _____, _____, and associated organs. Water moistens the air we breath, water and salts leaves your body as _____ and helps cool your body. A pair of _____ take care of most of the blood filtering.
59. The kidneys keep necessary salts, _____, and water and return these to the blood. While wastes like excess salt and _____ are collected in the form of _____

_____. Urine is stored in the _____ and released through the _____.