**Chapter One**  
Q- A hormone called calcitonin, produced by the thyroid gland, is released in response to increased levels of calcium ions in the blood. If this hormone acts through negative feedback, what effect will its release have on blood calcium levels?

A-Negative feedback occurs when a variation outside the normal limit triggers an automatic response that corrects the situation. The stimulus will produce a response that opposes the original stimulus. In the case of calcitonin being released, it will cause calcium levels in the blood to decrease. Calcitonin will be secreted until calcium levels are normal and homeostasis is achieved.   
  
**Chapter Two**  
Q- The element sulfur has an atomic number of 16 and an atomic mass of 32. How many neutrons are in the nucleus of a sulfur atom? Assuming that sulfur forms covalent bonds with hydrogen, how many hydrogen atoms could bond to one sulfur atom?

A-Sulfur has sixteen neutrons. Two hydrogen atoms can bond to one sulfur atom.  
  
**Chapter Three**  
Q-Two solutions, A and B, are separated by a selectively permeable barrier. Over a period of time, the level of fluid on side A increases. Which solution initially had the higher concentration of solute?

A-A solute is dissolved into another substance. Side B had a higher concentration of solute because some of the solution dissolved into side A.  
  
**Chapter  Four**

Q-You are asked to develop a scheme that can be used to identify the three different types of muscle tissue in two steps. What would the two steps be?  
  
A- The first thing you would do is look at the actin and myosin filaments. If they are scattered, then that one is the smooth muscle tissue. Skeleton and cardiac muscle tissue remain. To identify these, you would need to take a look at the muscle fibers. If they are marked by a series of bands called striations, then the tissue is skeletal muscle.   
  
**Chapter Five**

Q-Vanessa notices that even though her 80-year-old grandmother keeps her thermostat set at 80 degrees, she still wears a sweater in her house. When Vanessa asks her grandmother why, her grandmother tells her that she is cold. Vanessa can’t understand this and asks you for an explanation. What would you tell her?  
  
A-As the human body ages, the skin becomes thinner and weaker. Skin does help to keep the body warm, and if it deteriorates that warmth will be compromised. It is possible that the grandmother is still feeling cold a warm house because her skin is no longer able to keep her warm.  
  
**Chapter Six**

Q-Tess is diagnosed with a disease that affects the membranes surrounding the brain. The physician tells Tess’s family that the disease is caused by an airborne virus. Explain how this virus could have entered the cranium.  
  
A-For the most part, the cranium is difficult to penetrate. However, the openings in our nasal cavities and sinuses make it possible to something to get inside the cranium. The virus probably leaked in when Tess was breathing.  
  
**Chapter Seven**

Q-Makani is interested in building up his tight muscles, specifically his quadriceps. What exercises would  you recommend to help him accomplish his goal?

A-Squats are the best exercise for building quad strength. They involve you pushing up large amounts of weight while isolating the quad muscles. Leg press is a pretty good one too.

**Chapter 8**

Q: A police officer has just stopped Bill on suspicion of driving while intoxicated. The officer asks Bill to walk the yellow line on the road and then asks him top place the tip of his index finger on the tip of his nose. How would these activities indicate Bill’s level of sobriety? Which part of the brain is being tested by these activities?  
  
A: Drinking alcohol impairs one’s motor abilities. The motor section of the brain is being tested during the activities, and because Bill is intoxicated, he will not be able to perform them well.   
  
**Chapter 9**

Q: After a fourth of July fireworks extravaganza, Millie finds it difficult to hear normal conversation, and her ears keep ringing. What is causing her hearing problems?

A: The ringing of the ears is called tinnitus. Being constantly exposed to loud noises can damages the ears, as they are only meant to take in so much sound. Once the threshold of decibels has been reached there is damage.   
 **Chapter 10**  
  
Q: Julie is pregnant and eating unhealthily. How could this situation affect her parathyroid condition?  
  
A: The hormone will not be getting enough nutrition will not trigger the responses it needs to. It will be doing all it can to help the growing baby and will not give Julie enough.

**Chaper 11**

Q:Why do many individuals with advanced kidney disease become anemic?  
  
A: A hormone called erythropoetin is produced in the kidneys.  This hormone stimulates the production of red blood cells. If there is something wrong with the kidneys, they are not going to be producing this hormone in the way that they should. This will lead to a low red blood cell count.   
  
**Chapter 12**

Q: Karen is taking the medication verpamil, a drug that blocks the calcium channels in cardiac muscle cells. What effect would you expect this medication to have on Karen’s stroke volume?  
  
A:  All muscle needs calcium to contract. If there is something blocking calcium channels, the cardiac muscle is not going to contract and pump. Stroke volume is directly dependent on the muscle contraction, so the stroke volume will decrease.

**Chapter 13**

Q:  Gina awakens suddenly to the sound of her alarm clock. Realizing she is late for class, she jumps to her feet, feels light-headed, and falls back on her bed. Why doesn’t this always happen?  
  
A:  When you have been sitting down or sleeping for a long time, the blood in your body shifts to accommodate the position. When Gina stood up suddenly, all the blood rushed into her head way too fast and caused her to get lightheaded. The sudden movement made the blood move too fast.   
  
**Chapter 14**

Q: Sylvia’s grandfather has been diagnosed with lung cancer. His physician orders biopsies of several lymph nodes from neighboring regions of the body. Sylvia wonders why, since his cancer is in his lungs. What would you tell her?

A: The lymph nodes store a special fluid that can trap cancer cells. It doesn’t really matter why type of cancer it is, cancer cells will usually be present in the lymph nodes. Often times certain lymph nodes have to be removed along with the cancer.

**Chapter 15**Q: A decrease in blood pressure will trigger a baroreceptor reflex that leads to increased ventilation. What is the possible advantage of this reflex?  
  
A: The increased ventilation will allow for a better flow of air in and out of the blood. The increase of the oxygen to the blood will have a beneficial effect on the flow and pressure.   
  
**Chapter 16**

Q: Some patients with gallstones develop pancreatitis. How could this occur?

A: Gallstones passing through the bile duct can sometimes cause inflammation of the pancreas because the pancreas and gallbladder share the drainage duct.

**Chapter 17**

Q: Why is an individual who is starving more susceptible to infectious disease than an individual who is well nourished?

A: Nourishment and food is crucial to the body. It gives us energy, and maintains the performance of bodily functions and systems. Without the nourishment, things simply wont work. Being malnourished will bring the immune system down.