Questions from the Book:

1) Describe and diagram the structure of a plasma membrane. What are the two principal types of molecules in plasma membranes? What are the principal functions of plasma membranes?

2) What are the three categories of proteins commonly found in plasma membranes, and what is the function of each?

3) Define diffusion, and compare that process with osmosis.

4) Define hypotonic, hypertonic, and isotonic. What would be the fate of an animal cell immersed in each of the three types of solutions?

5) Name and describe the four types of cell-to-cell junctions. Which junction allows for communication between the interior of adjacent plant cells? Animal cells?

Additional Questions:

6) From the following list of molecules, determine whether each would pass though a membrane as a result of osmosis, simple diffusion, or facultative diffusion: Glucose, Na⁺, H₂O, amino acid monomers, Cl⁻, O₂, CO₂.

7) Describe the fluid mosaic model of cell membranes. What imparts fluidity to the membrane? What makes it a mosaic?

8) If all transport proteins move substances across cell membranes by changing shape, then how do the passive transporters differ from the active transporters?

9) Define exocytosis and endocytosis. Describe the main features of the three pathways of endocytosis.

Applying Your Knowledge:

10) The bacterium *Vibrio cholerae* causes the disease cholera. Infected people have severe diarrhea and may lose up to twenty liters of fluid (water) in a day. The bacterium enters the body if someone drinks contaminated water, then it adheres to the intestinal lining. It secretes a substance that is toxic to cells of the intestinal lining, causing them to secrete sodium and chloride ions into the fluids in the intestinal tract. Why would this sequence of events cause the massive fluid loss associated with this disease?

11) Red blood cells will swell up and burst when placed in a hypotonic solution such as pure water. Why don’t we swell up and burst when we swim in water that is hypotonic to our cells and body fluid?