

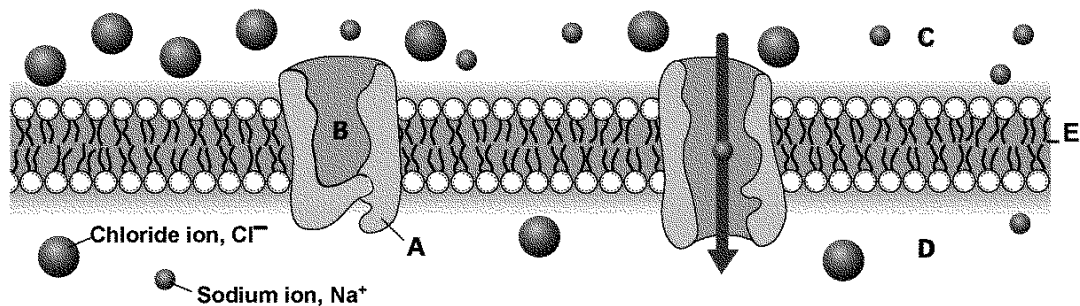
Assessment

Chapter Test**Cells and Their Environment**

In the space provided, write the letter of the term or phrase that best completes each statement or best answers each question.

- _____ 1. Which of the following is an example of osmosis?
- movement of ions from an area of high concentration to an area of lower concentration
 - movement of ions from an area of low concentration to an area of higher concentration
 - movement of free water molecules from an area of high concentration to an area of lower concentration
 - movement of free water molecules from an area of low concentration to an area of higher concentration

Questions 2–5 refer to the figure below, which shows transport through the cell membrane.



- _____ 2. The interior of the pore, labeled *B*, enables substances to pass through the cell membrane without coming in contact with the
- solution outside the cell.
 - nonpolar interior of the lipid bilayer.
 - polar interior of the lipid bilayer.
 - All of the above
- _____ 3. The area that has the greatest concentration of ions in solution is labeled
- A*
 - B*
 - C*
 - D*
- _____ 4. What type of transport is illustrated by the figure above?
- osmosis
 - active transport
 - diffusion
 - facilitated diffusion
- _____ 5. Which type of substance is labeled *E*?
- a phospholipid
 - oxygen
 - an amino acid
 - a glycoprotein

Chapter Test *continued*

- _____ 6. Which of these can pass unaided through a cell membrane?
- a. water
 - b. sugars
 - c. amino acids
 - d. steroid hormones
- _____ 7. Membrane proteins are held in place in the cell membrane because
- a. the lipid bilayer is polar throughout.
 - b. the amino acids have polar and nonpolar parts.
 - c. water repels the polar ends of phospholipids.
 - d. All of the above
- _____ 8. How do many animal cells avoid the swelling that osmosis can cause?
- a. by pumping solutes out of the cytoplasm
 - b. by using their contractile vacuoles to expel ions
 - c. by using their contractile vacuoles to expel water
 - d. by stiffening the cell membrane with membrane proteins
- _____ 9. During which of the following processes do vesicles sometimes fuse with lysosomes?
- a. facilitated diffusion
 - b. osmosis
 - c. exocytosis
 - d. endocytosis
- _____ 10. Signal molecules attach to specific cells because of the
- a. orientation of the cell membrane.
 - b. opening of channel proteins.
 - c. shape of the receptor binding site.
 - d. change in shape of the signal molecule.
- _____ 11. Which of these acts as a signal molecule in the cytoplasm of a cell?
- a. a receptor protein
 - b. a second messenger
 - c. a transport protein
 - d. an enzyme

Complete each statement by writing the correct term or phrase in the space provided.

12. A cell membrane is _____ permeable because it allows the passage of some substances and not others.
13. Cell-surface markers allow a cell to _____ other cells.
14. When the concentration of dissolved particles is the same throughout a solution, the system is said to be in _____.
15. Osmosis and diffusion are both examples of _____.
16. A cell shrinks when it is placed in a(n) _____ solution.

Chapter Test *continued*

17. Using energy to transport molecules across a membrane from an area of low concentration to an area of higher concentration is called

_____.

18. In facilitated diffusion, _____

_____ aid the movement of substances down their concentration gradient.

19. A specific signal molecule binds to a(n) _____

_____ in the cell membrane, relaying information to the cell.

Read each question, and write your answer in the space provided.

20. What is the main way the cell membrane helps maintain homeostasis? What are two other ways the cell membrane contributes to homeostasis?

21. Suppose you want to explain a concentration gradient to someone. Create a scenario that illustrates movement down a concentration gradient.

Chapter Test *continued*

22. Why is it dangerous for humans to drink large quantities of seawater?

23. Explain how the sodium-potassium pump works and why it is important.

24. Endocytosis and exocytosis are opposite processes. Describe each process, and list two things that these processes have in common.

25. Describe three ways in which the binding of a signal molecule to a receptor protein can change the activities of the receiving cell.
