Chapter 02
Test Bank: The Nature of Molecules

Multiple Choice Questions

1. All of the substances of the universe that have mass and occupy space are defined as _____.
A. matter
B. energy
C. mass
D. molecules

Bloom's Level: Remember
Section: 2.01
Topic: General

2. All atoms possess _____, defined as the ability to do work.
A. matter
B. energy
C. molecules
D. space

Bloom's Level: Remember
Section: 2.01
Topic: General

3. Bohr proposed that atoms of any kind contain _____ particles. Those located in the nuclear core are called neutrons and protons.
A. ionic
B. molecular
C. subatomic
D. tiny

Bloom's Level: Remember
Section: 2.01
Topic: Chemistry

4. The number of protons in a given atom is equal to its _____ number.
A. atomic
B. mass
C. hydrogen
D. molecular

Bloom's Level: Remember
Section: 2.01
Topic: Chemistry

5. Isotopes that decay with a nuclear break-up and emit a significant amount of energy are said to be _____.
A. energetic
B. ionic
C. radioactive
D. isotopic

Bloom's Level: Remember
Section: 2.01
Topic: Chemistry

6. There are 92 naturally occurring _____, each made up of atoms which contain a specific number of protons and a different arrangement of electrons.
A. minerals
B. elements
C. metals
D. molecules

Bloom's Level: Remember
Figure: 2.07
Section: 2.02
Topic: Chemistry

7. The _____ of water molecules determines its chemistry and thus the chemistry of life.
A. closeness
B. cohesiveness
C. wetness
D. polarity

Bloom's Level: Remember
Figure: 2.11
Section: 2.04
Topic: Chemistry

8. _____ is defined as the negative logarithm of the hydrogen ion concentration in the solution.
A. pH
B. water
C. temperature
D. solubility

Bloom's Level: Remember
Section: 2.06
Topic: Chemistry

9. A substance that acts as a reservoir for H^+ ions, opposing any increase or decrease in concentration, is a(n) _____.
A. buffer
B. acid
C. base
D. antacid

Bloom's Level: Remember
Section: 2.06
Topic: Chemistry

10. Atoms are composed of electrons and a dense nucleus which contains protons and _____.
A. oxygen
B. water
C. hydrogen
D. neutrons

Bloom's Level: Remember
Figure: 2.03
Section: 2.01
Topic: Chemistry

11. Carbon-12, Carbon-13 and Carbon-14 are examples of _____.
A. radioactivity
B. isotopes
C. isomers
D. molecules

Bloom's Level: Remember
Figure: 2.04
Section: 2.01
Topic: Chemistry

12. Organisms are composed of molecules, which are collections of smaller units, called
A. molecules.
B. atoms.
C. electrons.
D. polymers.
E. ions.

Bloom's Level: Remember
Section: 2.01
Topic: General

13. Negatively charged particles of atoms with almost no mass are called
A. electrons.
B. protons.
C. neutrons.
D. ions.
E. polymers.

Bloom's Level: Remember
Section: 2.01
Topic: Chemistry

14. Elements that have atoms with the same atomic numbers but different number of neutrons are called
A. polymers.
B. ions.
C. molecules.
D. radioactive.
E. isotopes.

Bloom's Level: Remember
Figure: 2.04
Section: 2.01
Topic: Chemistry

15. In chemical reactions, the gain of an electron is called
A. oxidation.
B. reduction.
C. polymerization.
D. ionization.
E. covalent bonding.

Bloom's Level: Remember
Section: 2.01
Topic: Chemistry

16. When atoms gain or lose electrons, they become negatively or positively charged. They are known as
A. molecules.
B. isotopes.
C. ions.
D. radioactive.
E. unstable atoms.

Bloom's Level: Remember
Section: 2.01
Topic: Chemistry

17. When two atoms share a pair of electrons, the bonding is referred to as
A. ionic.
B. covalent.
C. unstable.
D. hydrogen.
E. polar.

Bloom's Level: Remember
Section: 2.03
Topic: Chemistry

18. Water molecules are polar with ends that exhibit partial positive and negative charges. Such opposite charges make water molecules attract each other through bonds called
A. ionic bonds.
B. covalent bonds.
C. hydrogen bonds.
D. unstable bonds.
E. radioactive bonds.

Bloom's Level: Remember
Section: 2.03
Topic: Chemistry

19. Which of the following statements about protons is false?
A. Protons have one positive charge.
B. Protons have one Dalton of mass.
C. Protons are always found in the nucleus of the atom.
D. The number of protons is the same as the number of electrons.

Bloom's Level: Evaluate
Section: 2.01
Topic: Chemistry

20. Which of the following statements about electrons is false?
A. An electron has one negative charge.
B. The mass of an electron is 1/1840 Dalton.
C. Electrons are always found in the nucleus of the atom.
D. Electrons are found in an area around the nucleus, called the orbital.

Bloom's Level: Evaluate
Section: 2.01
Topic: Chemistry

21. The atomic number of an element is equal to the number of
A. protons only.
B. neutrons only.
C. protons plus electrons.
D. protons plus neutrons.
E. neutrons plus electrons.

Bloom's Level: Remember
Section: 2.01
Topic: Chemistry

22. Ordinary oxygen has an atomic mass of 16 and an atomic number of 8. This means that the number of neutrons in this type of oxygen is
A. 24.
B. 8.
C. 16.
D. not stable.
E. none.

Bloom's Level: Remember
Figure: 2.03
Section: 2.01
Topic: Chemistry

23. Which of the following statements about orbitals is false?
A. They correlate with the number of protons in the nucleus.
B. They cannot contain more than two electrons.
C. They contain electrons of the same energy.
D. They are paths around the nucleus in which the electrons orbit.

Bloom's Level: Evaluate
Figure: 2.05
Section: 2.01
Topic: Chemistry

24. Oxygen ordinarily has 8 protons and 8 neutrons. Another rare form has two extra neutrons. These two forms are
A. oxygen ions.
B. oxygen isotopes.
C. oxygen compounds.
D. oxygen shells.
E. oxygen orbitals.

Bloom's Level: Understand
Section: 2.01
Topic: Chemistry

25. Which of the following elements' isotopic ratios are used to make absolute determinations of the time of formation of materials?
A. oxygen
B. hydrogen
C. carbon
D. nitrogen
E. radon

Bloom's Level: Remember
Section: 2.01
Topic: Chemistry

26. Atoms in which the number of electrons does not equal the number of protons are known as
A. valences.
B. ions.
C. isotopes.
D. molecules.
E. orbitals.

Bloom's Level: Remember
Section: 2.01
Topic: Chemistry

27. The area around a nucleus where an electron is most likely to be found is called
A. electrical space.
B. energy level.
C. polar space.
D. radioactive field.
E. orbital.

Bloom's Level: Remember
Figure: 2.05
Section: 2.01
Topic: Chemistry

28. Regardless of its shape, a given orbital may contain no more than
A. 1 electron.
B. 4 electrons.
C. 8 electrons.
D. 2 electrons.
E. 92 electrons.

Bloom's Level: Remember
Figure: 2.05
Section: 2.01
Topic: Chemistry

29. All atoms tend to fill their outer energy levels with the maximum number of electrons, usually eight. Depending on whether the atoms satisfy this simple octet rule or not will allow the prediction of
A. chemical behavior of the atoms.
B. whether they will be found in nature.
C. whether they will dissolve in water.
D. their radioactive energy.

Bloom's Level: Understand
Figure: 2.05
Section: 2.01
Topic: Chemistry

30. Mendeleev found that when he arranged the known elements according to their atomic mass, the entries in the table exhibited a pattern of chemical properties that repeated itself in groups of eight elements. This led to the generalization now known as
A. an atomic model.
B. maximum filling rule of outer electrons.
C. periodic table.
D. octet rule.
E. planetary model.

Bloom's Level: Remember
Section: 2.02
Topic: Chemistry

31. Sodium has 11 electrons arranged in three energy levels. The outer level has only one electron. In order to become stable, the atom loses an electron thus exposing the previous level with 8 electrons and subsequently becomes an ion with
A. 1 negative charge.
B. no charge.
C. 8 negative charges.
D. 1 positive charge.
E. 8 positive charges.

Bloom's Level: Understand
Section: 2.01
Topic: Chemistry

32. In the crystal matrix of ordinary salt, the sodium and chlorine are held together by
A. atomic bonds.
B. covalent bonds.
C. ionic bonds.
D. hydrogen bonds.
E. nonpolar bonds.

Bloom's Level: Remember
Figure: 2.09
Section: 2.03
Topic: Chemistry

33. What type of products are made in chemical reactions involving the shifting of atoms of one molecule to another?
A. buffers
B. reactants
C. compounds
D. elements
E. ions

Bloom's Level: Remember
Section: 2.03
Topic: Chemistry

34. Two carbon atoms might be joined to each other by the sharing of two pairs of electrons, forming a(n)
A. single bond.
B. ionic bond.
C. carbon bond.
D. double bond.
E. quadruple (4 point) bond.

Bloom's Level: Remember
Section: 2.03
Topic: Chemistry

35. Which of the following is not one of the four most abundant (more than 99%) atoms found in living things?
A. carbon
B. hydrogen
C. nitrogen
D. oxygen
E. phosphorus

Bloom's Level: Remember
Section: 2.02
Topic: Chemistry

36. Life is thought to have evolved from complex molecules formed by the interaction of smaller molecules in oceans and the atmosphere. The substance which brought these molecules together to interact is
A. hydrogen.
B. acids.
C. water.
D. buffers.
E. salts.

Bloom's Level: Remember
Section: 2.04
Topic: Evolution

37. Because oxygen is more electronegative than hydrogen, the water molecule is
A. hydrophobic.
B. hydrophilic.
C. organic.
D. ionic.
E. polar.

Bloom's Level: Remember
Figure: 2.11
Section: 2.04
Topic: Chemistry

38. Water molecules are attracted to each other because of the opposite charges created by partial charge separations within the molecules. These attractions are called
A. atomic bonds.
B. covalent bonds.
C. ionic bonds.
D. hydrogen bonds.
E. double bonds.

Bloom's Level: Remember
Figure: 2.11
Section: 2.04
Topic: Chemistry

39. Water is extremely important in living things for all of the following reasons except
A. it adheres to substances (wets them) because it is polar.
B. it is an excellent buffer.
C. it has high specific heat and resists temperature change.
D. it is a good solvent; most things dissolve in it.
E. it has high heat of vaporization and low density of ice.

Bloom's Level: Evaluate
Section: 2.04
Topic: Chemistry

40. Nonpolar molecules tend to aggregate in water because they are forced to come into close proximity with each other due to
A. ionizing interactions.
B. hydrophilic interactions.
C. hydrophobic interactions.
D. dissolving interactions.
E. sticky interactions.

Bloom's Level: Remember
Section: 2.04
Topic: Chemistry

41. When water ionizes, it produces equal amounts of hydrogen and hydroxide ions, which can reassociate with each other. Water is thus a(n)
A. acid.
B. base.
C. alkali.
D. base and an acid.
E. buffer.

Bloom's Level: Remember
Section: 2.06
Topic: Chemistry

42. Compared with a pH of 7, a solution of pH 5 has
A. 1/100 of the hydrogen concentration.
B. 5/7 of the hydrogen concentration.
C. very nearly the same concentration.
D. 2 times the hydrogen concentration.
E. 100 times the hydrogen concentration.

Bloom's Level: Apply
Figure: 2.16
Section: 2.06
Topic: Chemistry

43. A scientist conducts a procedure that causes nitrogen atoms to gain neutrons. The resulting atoms will be
A. ions of nitrogen.
B. positively charged.
C. negatively charged.
D. isotopes of nitrogen.
E. new elements with higher atomic numbers.

Bloom's Level: Apply
Section: 2.01
Topic: Chemistry

44. The half-life of Carbon-14 is approximately 5,600 years. Using this information scientists have been able to determine the age of some artifacts left by humans. Suppose that a scientist wanted to know approximately how old a piece of wood was that she found on the floor in an old cave that had recently been discovered. She removed the wood (with permission) to her laboratory. Her wood sample contained 2 grams of Carbon-14. If the age of the wood was determined to be 22,400 years old, how much Carbon-14 originally existed in this piece of wood?
A. 32 grams
B. 16 grams
C. 12 grams
D. 8 grams
E. 4 grams

Bloom's Level: Apply
Section: 2.01
Topic: Chemistry

45. Two hydrogen atoms and one oxygen atom will combine chemically to form a water molecule. The chemical bonds that hold the molecule together are covalent bonds. These covalent bonds convey a polarity to each water molecule. Simply stated, polarity means that there is a positive side and a negative side to the molecule. The positive side of one water molecule is attracted to the negative side of another water molecule, forming a hydrogen bond. Which of the following pure water properties reflects this type of bonding?
A. the ability to act as a buffer
B. the ability to quench a thirst
C. the ability to travel through xylem tubes in a plant's vascular system
D. the ability to form hydrogen and oxygen gases
E. the ability to conduct electricity

Bloom's Level: Apply
Section: 2.04
Topic: Chemistry

46. Water is most dense and thus heavier at 4 degrees Centigrade. At zero degrees Centigrade ice forms and can float on liquid water. Suppose ice were most dense at zero degrees Centigrade. Select the best explanation of what would happen in aquatic systems.
A. The ice would cover the surface of the aquatic system and would never melt.
B. The ice would cover the bottom of the aquatic system and would build up in layers over time, especially in colder climates.
C. The ice would eventually form into large sheets and would travel as a glacier carving out more depressions for lakes to form.
D. The cold temperatures and the subsequent ice formation would prevent hydrogen bonds from forming between the water molecules, thus causing the existing ice crystals to become disassociated from each other.

Bloom's Level: Evaluate
Section: 2.04
Topic: General

Your dog becomes ill and you rush him to the veterinarian's office. A technician draws blood from your dog's leg for a lab test that has been ordered by the vet. After a few minutes the lab results are given to the vet. The vet grabs a bottle from a shelf and begins to fill a syringe with a fluid. You inquire about the fluid. The vet says your dog is in acute acidosis and needs an immediate injection to correct the condition.

47. Based on the information provided, you know that
A. acidosis means that your dog's blood pH has dropped from its normal level and to correct the situation an injection of saline is required to reverse the condition.
B. acidosis means that your dog's blood pH has raised from its normal level and to correct the situation an injection of saline is required to reverse the condition.
C. acidosis means that your dog's blood pH has dropped from its normal level and to correct the situation an injection of a buffering solution is required to reverse the condition.
D. acidosis means that your dog's blood pH has raised from its normal level and to correct the situation an injection of a buffer is required to reverse the condition.

Bloom's Level: Apply
Section: 2.06
Topic: Chemistry

48. Based on the information provided, you know that acidosis means that
A. your dog's blood pH has moved toward the acidic end of the pH scale and has a higher pH value than normal.
B. your dog's blood pH has moved toward the acidic end of the pH scale and has a lower pH value than normal.
C. your dog's blood pH has moved toward the basic end of the pH scale and has a higher pH value than normal.
D. your dog's blood pH has moved toward the basic end of the pH scale and has a lower pH value than normal.

Bloom's Level: Apply
Section: 2.06
Topic: Chemistry

49. As you and a friend are entering a chemistry laboratory at your university, you see a sign that states in big, bold, red letters: DANGER—RADIOACTIVE ISOTOPES IN USE. Your friend is an accounting major and has not had any science courses yet. She asks you what a radioactive isotope is and you respond correctly using which of the following choices.
A. Radioactive isotopes are atoms that are unstable and as a result emit energy in a process called radioactive decay.
B. Radioactive isotopes are atoms that are stable and as a result emit energy in a process called radioactive decay.
C. Radioactive isotopes are atoms that are stable and as a result only emit energy if they are exposed to higher temperatures.
D. Radioactive isotopes are atoms that are unstable but unless actively disturbed by some chemical process will remain intact and pose no problems.

Bloom's Level: Evaluate
Section: 2.01
Topic: Chemistry

50. A biological researcher is conducting a chemical experiment. He is having trouble with the reaction because too much product is produced and this causes the reaction to slow down. You can see that there is plenty of catalyst in the reaction container. Which solution would you propose to keep the reaction moving along quickly?
A. Increase the temperature.
B. Decrease the temperature.
C. Add more reactants.
D. Remove some of the reactants and add more catalyst.
E. Increase the temperature and remove some of the reactants.

Bloom's Level: Understand
Section: 2.03
Topic: Chemistry

51. Your friend is having a little difficulty understanding the nature of covalent bonding, especially single bonds, double bonds, and triple bonds. He thinks that you can explain the difference. What answer would be correct?
A. Covalent bonds are bonds between atoms in which the atoms share electrons. For example, a single bond involves one electron, a double bond involves two electrons, and a triple bond involves three electrons.
B. Covalent bonds are bonds between atoms in which the atoms shares pairs of electrons. For example, a single bond involves one pair of electrons, a double bond involves two pairs of electrons, and a triple bond involves three pairs of electrons.
C. Covalent bonds are bonds between atoms in which the atoms receive electrons. For example, a single bond involves removing one electron, a double bond involves removing two electrons, and a triple bond involves removing three electrons.
D. Covalent bonds are bonds between atoms with polar sides. For example, a single bond involves one electron and one proton, a double bond involves two electrons and two protons, and a triple bond involves three electrons and three protons.

Bloom's Level: Evaluate
Section: 2.03
Topic: Chemistry

52. Capillary action is one of the forces that aids water's upward movement in plants. The more narrow the diameter of the tube, the farther the water column will rise. Capillary action is a result of water molecules
A. storing heat and thus moving faster because of heat of vaporization.
B. producing sufficient surface tension to overcome the pull of gravity.
C. having a strong cohesive force and attaching to the surrounding vessel walls.
D. having an adhesive force, which allows them to attach to the vessel walls.
E. being associated with hydrophobic molecules, which can result in upward movement.

Bloom's Level: Remember
Figure: 2.14
Section: 2.04
Topic: General

53. Nuclear particle; no negative charge.
A. electron
B. ion
C. isotope
D. neutron
E. proton

Bloom's Level: Remember
Section: 2.01
Topic: Chemistry

54. Nuclear particle; positive charge.
A. electron
B. ion
C. isotope
D. neutron
E. proton

Bloom's Level: Remember
Section: 2.01
Topic: Chemistry

55. Smallest particle in the atom.
A. electron
B. ion
C. isotope
D. neutron
E. proton

Bloom's Level: Remember
Section: 2.01
Topic: Chemistry

56. Atom of the same element but with different mass.
A. electron
B. ion
C. isotope
D. neutron
E. proton

Bloom's Level: Remember
Section: 2.01
Topic: Chemistry

57. Atom is negatively charged because it has accepted an electron.
A. electron
B. ion
C. isotope
D. neutron
E. proton

Bloom's Level: Remember
Section: 2.01
Topic: Chemistry

58. One mole of a substance contains 6.02×10^{23} molecules. The atomic mass of Li is 3. If you have three moles of Li, how many grams does it weigh?
A. 3
B. 9
C. 1.806×10^{24}
D. cannot determine from the information provided

Bloom's Level: Apply
Section: 2.01
Topic: Chemistry

59. After taking your biology exam, you return to your car only to find that you had left the lights on and now the car battery is dead. Your friend offers to jump-start your car, but when you go to hook up the jumper cables you find that the battery terminals are covered with corrosion due battery acid condensation. Which of the following substances could you use to help clean the corrosion?
A. coffee
B. water
C. vinegar
D. baking soda

Bloom's Level: Apply
Section: 2.06
Topic: Chemistry

On your first day working in a laboratory, you are told to make up 1 Liter of a 0.5 Molar Tris solution with a pH of 7.4. You measure out the appropriate amount of Tris base and dissolve it in water. You then measure the pH and find out that it has an initial pH of 11. You add some concentrated HCl, and the pH begins to drop. However, as you approach the target pH, you find that you need to add large amounts of HCl to lower the pH even a small amount.

60. If the molecular weight of Tris base is 121.14, how many grams did you use?
A. 60.57
B. 121.14
C. 242.28
D. cannot determine from the information provided

Bloom's Level: Apply
Section: 2.06
Topic: Chemistry

61. Your final solution is
A. an acid.
B. a base.
C. a buffer.
D. cannot determine from the information provided.

Bloom's Level: Understand
Section: 2.06
Topic: Chemistry

62. On the first day of organic chemistry class the person sitting next to you exclaims that he is excited about the class because he is very interested in organic farming practices. You tell him that in the context of this class, organic refers to
A. agricultural farming practices.
B. trace elements such as zinc and iodine.
C. the 92 naturally occurring elements on Earth.
D. carbon-containing compounds.

Bloom's Level: Remember
Section: 2.02
Topic: Chemistry

63. Consider the following electronegativity values:
Boron (B) = 1.8
Carbon (C) = 2.5
Chlorine (Cl) = 3.2
Selenium (Se) = 2.6
Which of the following bonds is the most polar?
A. B—Cl
B. C—Cl
C. Se—Cl
D. cannot determine from the information provided

Bloom's Level: Apply
Section: 2.02
Topic: Chemistry

64. The reaction ($H2 + F2 \rightarrow 2HF$) is an example of a redox reaction. In reality, two half reactions are occurring. The half reaction ($H2 \rightarrow 2H^+ + 2e^-$) is a(n) _____.
A. reduction reaction
B. oxidation reaction
C. redox reaction
D. potential energy reaction

Bloom's Level: Apply
Section: 2.03
Topic: Chemistry

65. The electronic configuration of the noble gas Neon, which has an atomic number of 10, can be written as follows: $1s^2 2s^2 2p^6$. What is the electronic configuration of the noble gas Argon, which has an atomic number of 18?
A. $1s^2 2s^2 3p^6 4s^2 5p^6$
B. $1s^2 2s^6 2p^2 3s^6 3p^2$
C. $1s^2 2s^2 2p^6 3s^2 3p^6$
D. $1s^2 2s^8 3p^8$

Bloom's Level: Apply
Section: 2.01
Topic: Chemistry

66. After years of hard work in the laboratory, you have identified an enzyme involved in a cellular reaction. How does the enzyme affect both the reaction equilibrium between reactants and products and the time needed to reach equilibrium?
A. It alters the reaction equilibrium and shortens the time needed to reach equilibrium.
B. The reaction equilibrium is unaffected, but it shortens the time needed to reach equilibrium.
C. It alters the reaction equilibrium and lengthens the time needed to reach equilibrium.
D. The reaction equilibrium is unaffected, but it lengthens the time needed to reach equilibrium.

Bloom's Level: Understand
Section: 2.03
Topic: Chemistry

67. You walk down into your basement only to find that the carpeting on the floor is damp. Concerned, you look around for any large puddles of water or broken pipes, but find none. In fact, only the basement floor and carpeting is damp. Thinking about the properties of water, you realize that water must have wicked into the porous material, defying gravity. To which properties of water can this effect be attributed?
A. adhesion and cohesion
B. adhesion and solubility
C. adhesion, cohesion, and heat of vaporization
D. cohesion and solubility

Bloom's Level: Understand
Section: 2.04
Topic: Chemistry

68. You have recently discovered a new element, and find that this particular element has seven electrons in its outer energy level. What does this information tell you about the reactivity of this element?
A. The element is non-reactive.
B. The element is mildly reactive.
C. The element is highly reactive.
D. You cannot determine reactivity from the information provided.

Bloom's Level: Understand
Section: 2.03
Topic: Chemistry

You are doing an experiment that requires you to measure the amount of a particular compound produced in the reaction. You decide to use sulfer-35, which is an element that possesses different numbers of neutrons and protons. In this experiment, sulfer-35 will become incorporated into the product of interest during the reaction.

69. Based on information provided, which of the following best describes sulfer-35?
A. an atom
B. an isotope
C. an element
D. an anion

Bloom's Level: Apply
Section: 2.01
Topic: Chemistry

70. Based on information provided, how is sulfer-35 being used in this experiment?
A. as a tag or label
B. as a reaction product
C. as a catalyst
D. as a reaction buffer

Bloom's Level: Apply
Section: 2.01
Topic: Chemistry

71. Why is it necessary to take special safety precautions when using radioactivity?
A. Radioactive substances will ionize cells.
B. Radioactive substances have the potential to cause damage to living cells.
C. Radioactive substances decay.
D. Radioactive substances will perforate plasma membranes.

Bloom's Level: Remember
Section: 2.01
Topic: Chemistry

72. How does water's high heat of vaporization help you to feel cooler when you sweat?
A. The transition of water from a liquid to a gas requires a release of energy to break hydrogen bonds. In the example above, the energy is released from heat produced by your body, thus helping to lower the surface temperature of your body and make you feel cooler.
B. The transition of water from a liquid to a gas requires a release of energy to break hydrogen bonds. The energy is obtained from heat produced by your body, thus helping to lower the surface temperature of your body and make you feel cooler.
C. The transition of water from a liquid to a gas requires an input of energy to break hydrogen bonds. The energy is obtained from heat produced by your body, thus helping to lower the surface temperature of your body and make you feel cooler.

Bloom's Level: Understand
Section: 2.05
Topic: Chemistry

73. Salt is often used to melt ice on roads during the winter because it lowers the freezing/melting point of water. Based on what you have learned about the nature of chemical bonds and the properties of water, how does salt exert this effect?
A. When salt dissolves in water, individual Na^+ and Cl^- ions break away from the salt lattice and become surrounded by water molecules. Hydrogen bonds are broken, and the salt ions interfere with interactions between H and O. As a result, it is more difficult for water molecules to bond and form ice.
B. When salt dissolves in water, individual Na^+ and Cl^- ions break away from the salt lattice and become surrounded by water molecules. Hydrogen bonds are formed, and the salt ions bond with
H and O. As a result, it is more difficult for water molecules to bond and form ice.
C. When salt dissolves in water, individual Na^+ and Cl^- ions break away from the salt lattice and become surrounded by water molecules. Hydrogen bonds are broken, and the salt ions bond with
H and O. As a result, it is more difficult for water molecules to bond and form ice.

Bloom's Level: Understand
Section: 2.05
Topic: Chemistry