

Biportal study guide

[Environment](#), [Nature](#)



1. Polar molecules

- A. have bonds with an unequal distribution of electric charge.
- B. must form ions in water solution.
- C. have bonds with an equal distribution of electrical charge.
- D. have bonds with an overall negative charge.
- E. have bonds with an overall positive charge. Correct See Section

2. How Do Atoms Bond to Form Molecules? Points Earned.

Correct Answer:

Your Response: A.

2. Hydrocarbons are _____ and _____, whereas salts are _____ and _____.

- A. nonpolar; hydrophobic; polar; hydrophilic
- B. nonpolar; hydrophilic; polar; hydrophobic
- C. polar; hydrophilic; nonpolar; hydrophobic
- D. polar; hydrophobic; nonpolar; hydrophilic
- E. None of the above Correct See Section

3. The pH of coffee is close to 5 and that of pure water is 7. This means that:

- A. coffee is more basic than water.
- B. water is more acidic than coffee.
- C. the H⁺ concentration of coffee is seven-fifths that of water.
- D. the H⁺ concentration of water is one-one hundredth that of coffee.

- E. the H^+ concentration of water is one-hundred times that of coffee.

Correct See Section

3. 1 What Makes Water So Important for Life?

Correct Answer: D

4. Which of the following statements best describes the difference between an element and a molecule?

- A. An element is composed of atoms; a molecule is not.
- B. An element is composed of only one kind of atom; molecules can be composed of more than one kind of atom.
- C. An element is unstable; molecules are stable.
- D. Elements always have lower atomic weights than molecules.
- E. Elements exist in nature only as parts of molecules.

Correct Answer: B

Your Response: B

5. Solid salt, NaCl, is neutral. When dissolved in water, NaCl

- A. remains as NaCl (does not dissociate).
- B. dissociates to form Na^- and Cl^+ .
- C. dissociates to form Na^+ and Cl^- ions that do not interact with water molecules.
- D. dissociates to form Na^+ and Cl^- ions that interact with water molecules.
- E. does not dissociate but interacts with water molecules.

Correct Answer: D

Your Response: D

6. Why is the pH of a 0.1 M solution of acetic acid in water higher than that of a 0.1 M solution of HCl in the water?

- A. HCl is a weaker acid than acetic acid.
- B. The acetic acid does not fully ionize in water, but HCl does.
- C. HCl does not fully ionize in water, but acetic acid does.
- D. Acetic acid is a better buffer than HCl.
- E. Acetate (ionized acetic acid) is a strong base.

Correct Answer: B

Your Response: B

7. The reactivity of an atom arises from the

- A. energy difference between the s and p orbitals.
- B. potential energy of the outermost shell.
- C. average distance of the outermost shell from the nucleus.
- D. sum of the potential energies of all-electron shells.
- E. existence of unpaired electrons in the outermost shell.

Correct Answer: E

Your Response: E

8. The covalent bond formation depends on the ability of atoms to

- A. share electrons with other atoms.

- B. donate electrons to other atoms.
- C. receives electrons from other atoms.
- D. Both a and b
- E. All of the above

Correct Answer: A

Your Response: A

9. Which of the following structures molecules is incorrect?

- A. $\text{CH}_3\text{—NH}_3$
- B. $\text{CH}_2 = \text{CH}_2$
- C. $\text{CH}_3\text{—NH}_2$
- D. $\text{CH}_3\text{—NH}_3^+$ E. $\text{CH}_3\text{—CH}_3$

Correct Answer: A

Your Response: A

10. What property of water contributes most to the ability of fish in lakes to survive very cold winters?

- A. Water is cohesive.
- B. Water has a high heat capacity.
- C. Frozen water is denser than liquid water.
- D. Frozen water is less dense than liquid water.
- E. Water forms hydrogen bonds.

Correct Answer: D

Your Response: D

11. Water is essential to life. Which of the following physical properties of water effect (s) life in some beneficial way?

- A. Cohesiveness
- B. High heat capacity
- C. The high heat of vaporization
- D. Ice is less dense than liquid water
- E. All of the above Correct See Section
- Answer: E
- Response: E

12. Which of the following interactions between atoms is the strongest?

- A. Hydrophobic
- B. Ionic
- C. Covalent
- D. van der Waals
- E. Hydrogen bonds Correct See Section

Correct Answer: C

Your Response: C

13. Given that Avagadro's number is 6.02×10^{23} , how many molecules of KCl would there be in 10^{-13} liter of a 1 M KCl solution?

- A. 6.02×10^{36}
- B. 6.02×10^{10}
- C. 6.02×10^{-10}
- D. 6.02×10^3

- E. 6. 02? 1013

Answer: B

Your Response: B

14. For a covalent bond to be polar, the two atoms that form the bond must have

- A. differing atomic weights.
- B. differing numbers of neutrons.
- C. differing melting points.
- D. differing electronegativities.
- E. similar electronegativities.

Answer: D

Your Response: D

15. Which of the following statements about chemical reactions is false?

- A. They occur when atoms combine or change their bonding partners.
- B. Energy may be created or destroyed in a chemical reaction.
- C. Reactions may go to completion.
- D. Changes in forms of energy may accompany chemical reactions.
- E. The products of a chemical reaction are formed from the reactants.

Correct See Section

Correct Answer: B

Your Response: B

16. Propane (CH₃—CH₂—CH₃), is considered a nonpolar molecule because

- A. it does not contain oxygen.
- B. carbon and hydrogen have similar electronegativities.
- C. it is a gas.
- D. it is flammable.
- E. it forms hydrogen bonds.

Answer: B

Your Response: B

17. Isotopes of an element

- A. is always unstable and radioactive.
- B. have different numbers of protons.
- C. have the same atomic weight.
- D. have different numbers of neutrons.
- E. have different numbers of electrons.

Correct Answer: D

Your Response: D

18. An element that contains ten protons and ten electrons are likely to

- A. form covalent bonds with another element.
- B. form ionic bonds with another element.
- C. be chemically inert (stable).
- D. be radioactive.
- E. be toxic.

Answer: C

Your Response: C

19. Rank the elements carbon (C), hydrogen (H), oxygen (O), and phosphorus (P) in decreasing order of the number of covalent bonds they usually form.

A. C ; P; N; O; H B. P; O; C; N; H C. P; C; N; O; H D. P; C; O; N; H E. P; C; O; H;
N

Correct Answer: C

Your Response: C

20. The molecular weight of acetic acid is 60. How many grams of acetic acid would be required to prepare 10 ml of a 0. 001 M (1. 0 mM) solution?

- A. 6. 0
- B. 0. 6
- C. 0. 0006
- D. 0. 06 E. 0. 006 Correct See Section

Correct Answer: C

Your Response: C