

## Test Yourself

OCTOBER 18, 2021

### SEATWORK

- A. Multiple Choice. Encircle the letter that corresponds to the correct answer.
- Water molecules are bonded together by \_\_\_\_\_.
    - hydrogen bond
    - ionic bond
    - nonpolar covalent bond
    - polar covalent bond
  - A solution having a pH of 5 is \_\_\_\_\_.
    - strongly acidic
    - strongly basic
    - weakly acidic
    - weakly basic
  - Water can absorb a large amount of heat because of its \_\_\_\_\_ property.
    - surface tension
    - high heat capacity
    - high heat of fusion
    - high heat of vaporization
  - The property of water where molecules tend to cling to one another is called \_\_\_\_\_.
    - adhesion
    - cohesion
    - polarity
    - surface tension
  - It refers to the property of water where water molecules stick to other surfaces.
    - adhesion
    - cohesion
    - surface tension
    - viscosity
  - Hydrogen and oxygen are held together by \_\_\_\_\_ bond in a water molecule.
    - an ionic bond
    - a hydrogen bond
    - a polar covalent bond
    - a nonpolar covalent bond

7. Which of the following is a trace element in the human body?
- carbon
  - iron
  - nitrogen
  - oxygen
8. A covalent bond resulting in joining two atoms that are of the same kind is called \_\_\_\_\_.
- acid
  - buffer
  - diatomic molecule
  - salt
9. An atom having three electrons in its outer shell needs \_\_\_\_\_ electrons to maintain its stability.
- two
  - three
  - five
  - eight
10. Adding an acid to water results in a \_\_\_\_\_ pH.
- higher
  - lower
  - stable
  - neutral

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B. Critical Thinking. Answer the following items. Use additional sheets if necessary.

1. Why are buffers important?

The pH can change over time, as a result, it affects living organisms' systems and daily activities. However, the occurrence of a buffer in our body is significant because it helps to control the natural / common pH level. Maintaining the measurement of pH values is essential due to different body parts' duties.

2. Describe specific situations when deficiency of trace elements results in health problems.

Trace elements or minerals are fundamental needs in our body to sustain growth and good health. Trace elements' deficiency can lead to nutritional disorders. For instance, the lack of iodine in our body can be a source of goiter, wherein the thyroid gland expands oddly.

3. How does the polarity and hydrogen bonding of water contribute to its life-sustaining properties?

With the help of hydrogen bonding, it can connect to water molecules and DNA. Water's polarity and hydrogen bonding can make properties sustained because water upholds all-important characteristics in living systems. Through that characteristics, it can act as the maintenance of life. For example, water molecules stick to each other and to surfaces. Therefore, water serves as a transport system to allocate nutrients and other substances in our body.

### Essential Questions

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4. Why is matter important among living systems?
5. How do the unique properties of water allow life to exist on Earth?
6. Why is it important for the body to maintain a normal pH?
7. How does carbon dioxide affect or benefit your life?

4. Living and nonliving organisms are made up of matter. Humans can distinguish the main state of matter such as solid, liquid, and gas. Considering the fact that matter makes people alive because physical and biological systems are embodied in matter. Living organisms, like humans and animals, need water and food. Therefore, living organisms' basic needs are part of the significance of matter.

5. With the support of hydrogen bonds and polarity, water can use different exceptional characteristics. As an example of its characteristics, water is biological solvent, which means water's competence can dissolve a bunch of molecules. In an experiment of salt and water, water dissolves easily when it stirs. Water can break fastly the ionic bond and dissolve the salt. Not only that but also, water has high surface tension, high heat capacity, high heat of vaporization, high heat of fusion, a medium where chemical and physical processes take place, acts as a moisturizer of surface, serves as a lubricant, and presents a good cushion.

6. It is significant to keep the normal pH because it strives for well-conditioned and manages good health of one's body. Looking at a scenario, if the brain is neutral then it becomes more acidic, which will affect the normal activity of the brain. It can lead to some complications such as anxiety and panic disorders.

7. Carbon dioxide naturally benefits life because it is a significant role in a living system. In the process of photosynthesis, humans release carbon dioxide and plants release oxygen. It only affects when the organic matter or other carbon-containing compounds are burned that can cause global warming.