Lecture 3,4- study questions

Chemistry of Life: Water, Properties, Solutions

1. What is the formula for a molecule of water?
2. Water is called a _____ molecule because the oxygen end "acts" _____ charged and the hydrogen end "acts" _____ charged.
3. One hydrogen bond is _____, but many hydrogen bonds are _____.
4. How do hydrogen bonds form?
5. At sea level, water boils at _____ and freezes at _____.
6. List properties of water
7. What is cohesion?
8. How does adhesion DIFFER from cohesion?
9. Why does ice float in water?
10. Why is water considered as a universal solvent?
11. Why water is considered most abundant molecule in life?
12. Classify water according to phase.
13. Write the major properties of water.
14. Explain the three states of water. Define melting and boiling point. Mention importance of boiling and melting point
15. Discuss two unique characteristics of water that contributes to its vital importance in the process of life
16. The body is split into 3 solution filled compartments. What are they?
17. Show the distribution of water for a 70 kg man in the main compartments with volume.

SOLUTIONS & SUSPENSIONS

18. Define solution.
19. The _____ is dissolved in the _____ in a solution.
20. The _____ is the substance being dissolved and the _____ is what the substance is dissolved in.

ACIDS, BASES, & pH

1. Write the equation for the dissociation (separation) of water and label the hydrogen & hydroxide ions?
2. What does the pH scale actually measure?
3. The pH scale ranges from _____ with a pH of _____ being neutral.
4. Where are acids found on the pH scale?
5. Where are the bases found on the pH scale?
6. Each pH unit represents a factor of _____ change in concentration.
7. How much stronger is a substance with a pH of 3 than a pH of 6. Show how you got your answer.
8. Acids produce a lot of _____ ions, while bases contain lots of _____ ions.
9. What is a buffer?
10. Buffers are produced by the body to _____ acids and bases to maintain homeostasis.
11. Acids produce _____ ions, while bases have an excess of _____ ions.
12. The _____ scale measures the concentration of H+ ions and goes from _____.
13. From 0 to 7 are _____, a pH of 7 is _____, & above 7 to 14 are _____.
14. Define pH? What does "p" and "H" stands for?
15. Define pH, acid, base, buffer, acidic buffer solution and basic buffer solution with examples.
16. Mention two important biological buffer systems and where are those found?
17. What is the pH of human blood?
18. Suppose the pH changes from 4 to 8, what is the change in H+ concentration.

    1 unit change--- 10x

    2 unit change---100x

Properties of liquid

1. Differentiate between osmosis and diffusion

2. Differentiate between passive and active transport

3. Discuss on the process of diffusion with examples in living system.

4. Discuss on osmosis and active transport

5. Give the definition: Isotonic, Hypotonic and Hypertonic