

Biological and Chemical Significance of the Properties of Water

Directions: For each of the following, provide a written, detailed and thorough answer/explanation to the question or problem posed. Make sure that you are using only credible sources!!!

1. Water travels against gravity, up the xylem of plants. Describe how and why this process occurs
2. Nuclear power generators, which produce incredible amounts of thermal waste energy, are cooled by water. Describe briefly how nuclear reactors generate electricity and why water is used to cool them.
3. Many insects, and other small, nonvertebrate animals, can walk across the surface of still bodies of water. Explain how the properties of water account for this.
4. What is the density of water at 4 °C? How does this density change as you increase or decrease temperature and why is this biologically significant?

5. Explain briefly why water is such a good solvent. (Diagrams may be helpful here)

6. Explain why water is less dense in the solid phase than it is in the liquid phase.

7. Provide your own example of a biologically or chemically significant phenomenon that occurs because of the unique properties of water. Explain your example below