

Module 2: Basic Chemistry — Study Questions

1. What are the three subatomic particles? Describe their location, mass, and charge.
2. What determines the identity of an element (atomic number)?
3. What is an isotope? How are isotopes used in biology?
4. Explain the Octet Rule. Why do atoms form bonds?
5. What is the difference between an ionic bond and a covalent bond?
6. What is the difference between polar and non-polar covalent bonds?
7. What are hydrogen bonds? Why are they important in biology?
8. Why is water a polar molecule?
9. How does hydrogen bonding give water its unique properties?
10. Define cohesion, adhesion, and surface tension.
11. What is specific heat? Why does water have a high specific heat?
12. Why is water called the "universal solvent"?
13. What is the difference between hydrophilic and hydrophobic molecules?
14. What is pH? What is the pH scale?
15. What is the difference between an acid and a base?
16. A solution with pH 3 is how many times more acidic than a solution with pH 6?
17. What are buffers? Why are they important in biological systems?
18. What would happen if blood pH dropped from 7.4 to 6.8?
19. Why are noble gases largely unreactive?

20. How does ice floating affect aquatic ecosystems?