# Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# THE CHEMISTRY OF LIFE STUDY GUIDE

1. Define *atom –*

2. Define *matter –*

3. Define *element –*

4. Which four key elements are essential for life?

5. Define *trace element* –

6. Define *compound –*

7. Draw and label the atom. Tell me the charge of each of the subatomic particles

8. For each element, tell me the symbol, number of protons, neutrons, and electron it has.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Element** | **Symbol** | **Protons** | **Neutrons** | **Electrons** |
| Oxygen |  |  |  |  |
| Sulfur |  |  |  |  |
| Titanium |  |  |  |  |
| Mercury |  |  |  |  |
| Helium |  |  |  |  |
| Nitrogen |  |  |  |  |
| Argon |  |  |  |  |

9. Define *isotopes –*

10. Draw the electron orbital for the following elements:

 Calcium

 Oxygen

11. Define *covalent bond –*

12. Show how the following elements would covalently bond. Just show the Structural Diagrams.

 CH4 N2

CFCl3 NH3

13. Define *Ionic bond –*

14. Describe how Sodium and Chlorine bond. What are the charges of the sodium and chlorine ion?

15. Define *cation –*

16. Define *anion* –

18. If an atom loses electrons, it has a \_\_\_\_\_\_\_ charge. If it gains electrons, it has a \_\_\_\_\_\_ charge.

19. What are the main properties of water? Give examples of each.

20. Compare nonpolar and polar molecules.

21. Describe a hydrogen bond and why it forms with water.

24. Acid or base?

 High concentration of H+ pH 7

 High concentration of OH- pH 14

 pH 8 pH 6.8

 pH 2 pH 7.1

 pH 13 pH 9.2

25. How much more acidic is a pH of 2 than a pH of 4?

26. Explain how buffers work.