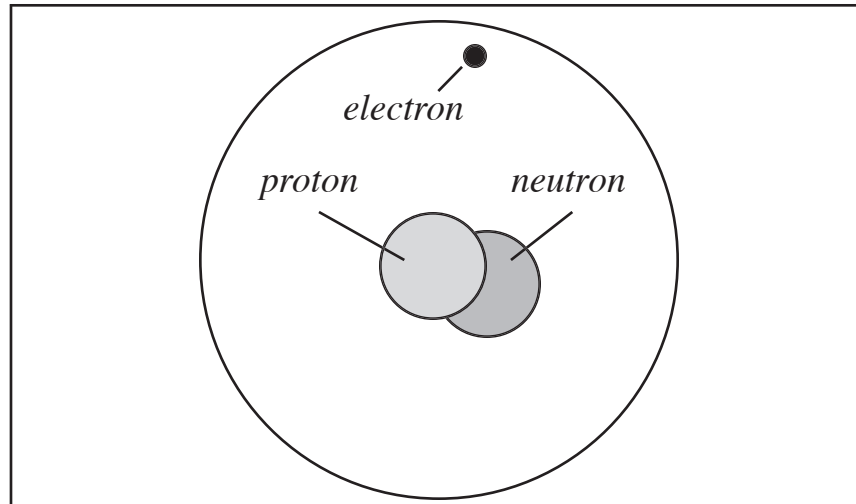


# Chemistry Level I : Test I Mid-term *Teacher's Answers*

1. Draw and label the parts of an atom.



2. Using your Periodic Table answer the following:

- a. What is the lightest element? hydrogen
- b. What is the heaviest naturally occurring element? uranium
- c. What is the symbol for lithium? Li
- d. How many electrons does lithium have? 3
- e. What is the atomic weight for lithium? 6.941
- f. How many neutrons does lithium have? 3

3. In your own words explain how bonds are formed between atoms.

Bonds form when electrons from one atom are shared [equally or un-equally] with  
the electrons from another atom.

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4. Name two ways electrons can be shared between atoms.

equally

un-equally

5. What is the name for an "equally-shared" electron bond?

covalent bond

6. What is the name for an "unequally-shared" electron bond?

ionic bond

7. Methane,  $\text{CH}_4$ , has what kinds of bonds?

covalent bond

8. Sodium chloride,  $\text{NaCl}$ , has what kind of bond?

ionic bond

9. How many bonds can hydrogen form?

one

10. How many bonds can carbon form?

four

11. How many bonds can nitrogen form?

three

12. How many bonds can oxygen form?

two

13. In your own words describe a *combination reaction* and give an example.

When two molecules or atoms combine with each other to form a new molecule.

sodium metal combines with chlorine gas to give sodium chloride.

14. What kind of reaction does water undergo if you apply high heat or an electric current?

decomposition reaction

15. In your own words describe an *exchange reaction* and give an example.

*When atoms from one molecule trade places with atoms from another molecule.*

*The reaction between hydrogen chloride and sodium hydroxide to produce table*

*salt and water is an exchange reaction.*

16. List four ways to tell if a chemical reaction has occurred.

*bubbles forming*

*temperature change*

*color change*

*precipitation*

17. Circle the correct word to complete the sentences:

An acid solution has a pH above below equal to 7.

A base solution has a pH above below equal to 7.

Pure water has a pH above below equal to 7.

18. List three ways to measure pH.

*pH paper*

*pH meter*

*acid-base indicator*

19. In your own words describe a *neutralization reaction* and give an example.

*A special kind of exchange reaction between an acid and a base.*

*The reaction between vinegar and baking soda is a neutralization reaction.*

20. How can you determine whether an unknown powder is an acid or a base?  
What technique could you use to find the concentration of the unknown acid or base?

*add some of the powder to pure water and then use a pH meter, pH paper, or an acid-base indicator to determine the pH.*

*a titration between the unknown acid (or base) and a known base (or acid) can be used to determine the concentration.*