

## BIO 130 Midterm Exam STUDY GUIDE

Name: **ANSWER KEY**

**Directions: Answer the following questions: True/False, fill in the blank, multiple choice. If the answer is FALSE, make it true by drawing a line through the incorrect portion and write the correct answer.**

1. A neutral atom with an atomic number of 15 will have 5 electrons in its outermost energy level. The rule used to determine electron distribution is 2, 8, 8....
2. In this chemical equation:  $\text{AgNO}_3 + \text{NaCl} \rightarrow \text{AgCl} + \text{NaNO}_3$   
Write the **REACTANTS**:  $\text{AgNO}_3 + \text{NaCl}$   
Write the **PRODUCTS**:  $\text{AgCl} + \text{NaNO}_3$
3. An atom that has gained electrons is **POSITIVE** or **NEGATIVE** ion. (circle one)
4. An atom with 12 electrons, 12 protons, and 14 neutrons has a mass number of 26. This is found by adding protons + neutrons.
5. The smallest particle of an element that still retains the properties of that element is a(n) atom.
6. An isotope is an atom of an element that varies in mass number due to variation in the number of **PROTONS, NEUTRONS** or **ELECTRONS**. (circle one). Ions are atoms of an element that varies in number of **PROTONS, NEUTRONS** or **ELECTRONS**. (circle one)
7. Which kind of attractive force holds 2 molecules together? **HYDROGEN BOND** or **STICKY BOND** (circle one)
8. A person jogging displays what kind of energy? **KINETIC** or **POTENTIAL** (circle one)  
A ball at the top of a hill displays what kind of energy? **KINETIC** or **POTENTIAL** (circle one)
9. One molecule of sodium nitrate ( $\text{NaNO}_3$ ) contains 5 atoms, and 3 elements. (How many of each?)
10. When using the pH scale, BASES have a HIGH or LOW pH value? (circle one) Acids have a HIGH or LOW pH value? (circle one)  
Which of these values has a higher concentration of ACID? **pH3** or **pH12** (circle one)  
Which of these values has a higher concentration of BASE? **pH 4** or **pH11** (circle one)
11. What is the charge of each of the following particles of an atom? (positive, negative, or neutral)  
PROTON: **positive**      NEUTRON: **neutral/no charge**      ELECTRON: **negative**
12. When 2 atoms share a pair of electrons, this type of chemical bond is **IONIC** or **COVALENT**. (circle one)
13. The attraction between a positively charged atom and a negatively charged atom within the same molecule is **IONIC** or **COVALENT** bonding. (circle one)
14. What type of reaction is this:  $\text{C}_{12}\text{H}_{22}\text{O}_{11} + \text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + \text{C}_6\text{H}_{12}\text{O}_6$   
**HYDROLYSIS** or **DEHYDRATION SYNTHESIS**. (circle one)



32. "I've gotten the same result over and over again!" This best demonstrates **RELIABILITY** or **VALIDITY**.  
(circle one)
33. **TRUE** or **FALSE**: Controls are necessary in scientific experiments because they serve as a basis for comparison with the experimental results.
34. If a person hears a sound coming from a hole in the ground. Then sometime later a groundhog is seen emerging from the hole. The person suspects that the sounds were made by the groundhog since they have witnessed this behavior before. The underlined portion of this story is best described as **OBSERVATION** or **HYPOTHESIS**.  
(circle one)
35. Put the following terms in the correct level of organization from **simple** to more **complex**.  
Organ, Cell, Organ System, Tissue    CELL, TISSUE, ORGAN, ORGAN SYSTEM
36. Which of the following are considered to be a scientific area of study? **ENGINEERING, ASTRONOMY, BIOLOGY, ECONOMICS** (circle ALL that apply)
37. **TRUE** or **FALSE**: All of the chemical reactions that take place within your body are known as **adaptation**.  
**METABOLISM**
38. Which of these steps of the scientific method should come only after a hypothesis has been formed?  
**OBSERVATION** or **EXPERIMENTATION** (circle one)