

## General Biology (BIO 110L)

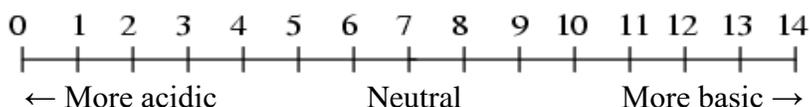
### PRE-LAB 3 : ATOMS & MOLECULES

Name: Ariyanna Parish Date: 8/24/2020

#### Acids, Bases, and pH

The degree to which a solution is acidic or basic is represented by a quantity known as pH. The pH of a solution can be measured by using pH meter, pH Paper and or color indicators.

#### The pH scale



1. Which of the following values indicates the greater concentration of acid?  
pH 5 or pH 2? **pH 5** (4 pts)
2. Which of the following values indicates the greater concentration of base?  
pH 14 or pH 9 ? **pH 14** (4 pts)
3. A student mixes strawberry koolaid and water. A pH meter is used to measure pH of 5.4. What kind of solution is strawberry Koolaid? (2 pts)  
A. **Acidic**    B. Basic    C. Neutral
4. Bromthymol blue is a chemical indicator that is **blue** in basic solutions, turns **green** in neutral, and turns **yellow** in acidic solutions. (50 pts)
  - A. What color you think bromthymol blue would be in water directly out of tap (pH 7.2)? **Green**
  - B. What color you think bromthymol blue would be in water in which exhaled air is blown through a straw for 5 min and the pH is 5.1? **Yellow**
  - C. What color you think bromthymol blue would be in water after a snail has lived in it for three days (pH 5.8)? **Yellow**
  - D. What color you think bromthymol blue would be in water after 2mL of bleach has been added to it and the pH is 9.4 ? **Blue**
  - E. What color you think bromthymol blue would be in water with instant coffee added to it (pH 5.0)? **Yellow**

#### Chemical Reactions



3. What does a pH of 7 indicate? **Neutral** (4pts)

4. Substances with a pH higher than 7 are considered \_\_\_\_\_ . (4 pts)

a. Acids      b. **Bases**      c. Neutral      d. Radicals

5. Distilled water with a pH of 7 is: (4 pts)

a. a salt      b. a base      c. an acid      d. **neutral**

6. Acids have a HIGH pH value. TRUE or **FALSE** (5 pts)

**7. Bromothymol blue** is a chemical indicator that is **blue** in basic solutions, turns **green** in neutral, and turns **yellow** in acidic solutions. **Phenolphthalein** is a chemical indicator that is **pink** in basic solutions, and does not react with neutral and acidic solutions to exhibit a color change.

A. When you place 5 drops of Solution A (lemon juice) in a clean test tube and add 2 drops of **Bromothymol Blue** indicator, the color of the lemon juice turns **yellow**. (5pts)

Lemon juice is: a. **Acidic**      b. Basic      c. Neutral

B. When you place 5 drops of Solution A (lemon juice) in a clean test tube and add 2 drops of **Phenolphthalein** indicator, the lemon juice turns **cloudy**. There is **no** specific color change. This indicates that lemon juice is **Basic**. (5 pts)

TRUE or **FALSE** (Circle one).

C. Which reagent (Bromothymol blue or Phenolphthalein) could be considered as an acid indicator? (5 pts)      A. **Bromothymol**      B. Phenolphthalein

8. Which of the following is considered physical evidence that a reaction took place between 2 substances? (5pts)

a. Color change      b. Texture change      c. Bubbles forming      d. **All of these**

9. In a chemical reaction, products are found on the \_\_\_\_\_ side of the equation. (5pts)

a. **Right**      b. Left      c. Either      d. Both

10. In the following chemical reaction:  $\text{NaCl} + \text{AgNO}_3 \rightarrow \text{NaNO}_3 + \text{AgCl}$  the reactants are: (5pts)

a. NaNO<sub>3</sub> and AgCl      b. NaCl and NaNO<sub>3</sub>      c. **NaCl and AgNO<sub>3</sub>**      d. AgNO<sub>3</sub> and AgCl

11. In the following chemical reaction:  $\text{HCl} + \text{NaOH} \rightarrow \text{NaCl} + \text{H}_2\text{O}$  the products are: (5pts)

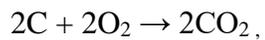
a. HCl and H<sub>2</sub>O      b. NaOH and NaCl      c. **NaCl and H<sub>2</sub>O**      d. HCl and NaOH

12. Complete the following equations by writing the **names** of the products. (20pts)

sodium chloride + silver nitrate → sodium nitrate + silver chloride

sodium iodide + lead nitrate → sodium nitrate + lead iodide

13. In the equation ..... (20pts)



- A) How many C atoms are on the left? 1
- B) How many C atoms are on the right? 1
- C) How many O atoms are on the left? 2
- D) How many O atoms are on the right? 2