Physical Science **Name _____**

ACT Preparation: Acid-Base Indicator

Read the introductory paragraphs and then answer the following questions:

1. What makes an acid-base indicator change color?

2. What is a transition range?

Experiment 1. Read the experiment and study the table.

3. Based on the description given in both paragraphs, draw a *well plate.*

4. Based on Table 1, what color does metanil yellow turn in a solution of pH 2?

5. Based on Table 1, for what pH values is resorcin blue not actually blue?

6. If you wanted to know if a solution had a pH of 1 or 2, which indicator would you use?

7. Why is indigo carmine the same color in each well?

Experiment 2. Read the experiment and study the table.

8. If you wanted to know if a solution had a pH of 8, which indicator would you use?

9. Indigo carmine turns from blue to yellow. What is the intermediate color for indigo carmine?_____ and at what pH does this color occur?

10. Curcumin changes from _____ to _____. At what pH values is this change visible?

Experiment 3. Read the experiment and study the table.

11. What is the pH of mystery solution IV? _____ Which pH indicator was the most helpful in determining the pH of solution IV?

12. Which solution has the highest pH?_____ Which pH indicator was the most helpful in determining the highest pH?

13. A student claimed that solution I had a pH of 7. Do the results of these experiments support his claim?_____. Explain your answer.

14. Write an inequality for the indicator colors:

Example: metanil yellow is red for pH ≤ 1 and is yellow for pH ≥ 3

a. Resorcin blue is red for pH _____ and is blue for pH _____

b. Curcumin is red for pH _____, yellow for pH _____, and is orange for pH _____.

c. Indigo Carmine: _____