**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.***

1. Based on the description given in both paragraphs, draw a *well plate.*
2. Based on Table 1, what color does metanil yellow turn in a solution of pH 2?
3. Based on Table 1, for what pH values is resorcin blue not actually blue?
4. If you wanted to know if a solution had a pH of 1 or 2, which indicator would you use?
5. Why is indigo carmine the same color in each well?

***Experiment 2. Read the experiment and study the table.***

1. If you wanted to know if a solution had a pH of 8, which indicator would you use?
2. Indigo carmine turns from blue to yellow. What is the intermediate color for indigo carmine?\_\_\_\_\_\_\_\_\_\_\_ and at what pH does this color occur?
3. Curcumin changes from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. At what pH values is this change visible?

***Experiment 3. Read the experiment and study the table.***

1. What is the pH of mystery solution IV? \_\_\_\_\_\_\_\_\_\_\_ Which pH indicator was the most helpful in determining the pH of solution IV?
2. Which solution has the highest pH?\_\_\_\_\_\_\_\_\_ Which pH indicator was the most helpful in determining the highest pH?
3. A student claimed that solution I had a pH of 7. Do the results of these experiments support his claim?\_\_\_\_\_\_\_\_\_\_\_\_\_. Explain your answer.
4. Write an inequality for the indicator colors:

Example: metanil yellow is red for pH and is yellow for pH

1. Resorcin blue is red for pH \_\_\_\_\_\_\_\_\_\_\_\_\_\_ and is blue for pH \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Curcumin is red for pH \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, yellow for pH \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and is orange for pH \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
3. Indigo Carmine: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_