**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Indicators Activity**

Part A: The Effect of Acids and Bases on Litmus Paper

1. Place 3-4 drops of 6M HCl, Hydrochloric acid solution, in a well plate cavity. Test with red litmus paper. Observe and record the color in the observation table.
2. Place 3-4 drops of 6M HCl, Hydrochloric acid solution, in a well plate cavity. Test with blue litmus paper. Observe and record the color in the observation table.
3. Place 3-4 drops of .5 M NaOH, Sodium Hydroxide solution, in a well plate cavity. Test with red litmus paper. Observe and record the color in the observation table.
4. Place 3-4 drops of .5 M NaOH, Sodium Hydroxide solution, in a well plate cavity. Test with blue litmus paper. Observe and record the color in the observation table.

|  |  |  |
| --- | --- | --- |
| Procedure | Appearance of Litmus before | Appearance of litmus after |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |

1. **Do you results from Part A agree with the pH ranges listed on table M? Explain.**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Part B: Determining pH Range of Indicators

1. Place 1 drop of methyl orange in each cavity numbered 1-7.
2. Add 1 drop of pH 1 to cavity 1; 1 drop of pH 3 to cavity 2; 1 drop of pH 5 to cavity 3; 1 drop of pH 7 to cavity 4; 1 drop of pH 9 to cavity 5; 1 drop of pH 11 to cavity 6; 1 drop of pH 13 to cavity 7.
3. Place 1 drop of bromothymol blue in each cavity numbered 1-7.
4. Add 1 drop of pH 1 to cavity 1; 1 drop of pH 3 to cavity 2; 1 drop of pH 5 to cavity 3; 1 drop of pH 7 to cavity 4; 1 drop of pH 9 to cavity 5; 1 drop of pH 11 to cavity #; 1 drop of pH 13 to cavity 7.
5. Place 1 drop of phenolphthalein in each cavity numbered 1-7.
6. Add 1 drop of pH 1 to cavity 1; 1 drop of pH 3 to cavity 2; 1 drop of pH 5 to cavity 3; 1 drop of pH 7 to cavity 4; 1 drop of pH 9 to cavity 5; 1 drop of pH 11 to cavity 6; 1 drop of pH 13 to cavity 7.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| pH | 1 | 3 | 5 | 7 | 9 | 11 | 13 |
| Methyl orange |  |  |  |  |  |  |  |
| Bromothymol Blue |  |  |  |  |  |  |  |
| Phenolphthalein |  |  |  |  |  |  |  |

1. **Do you results from Part B agree with the pH ranges listed on table M? Explain.**

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Part C: Determining the identity of an unknown solution.

1. Use the indicators to test the unknown solution. Record your observations below.
2. Use table M of your reference tables to determine each pH range that color represents.

|  |  |  |
| --- | --- | --- |
| Indicator | Color | pH range |
| Litmus |  |  |
| Phenolphthalein |  |  |
| Methyl Orange |  |  |
| Bromthymol Blue |  |  |

1. Provide a possible pH for your unknown solution: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_