**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 |  |  |

Part B: The Effect of Acids and Bases on Phenolphthalein Indicator

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

|  |  |  |
| --- | --- | --- |
| Procedure | Appearance of solution before | Appearance of solution after |
| 5 |  |  |
| 6 |  |  |

1. **Look on table M on your Regents Reference Tables. Do your results from procedure 1-6 agree with the colors and pH ranges listed on the table? Explain your reasoning.  Hint: acids have pH values less than 7 and bases have pH values greater than 7.**

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Part C: The Effect of pH Indicators

1. Place the well plate on a sheet of white paper.
2. Place one drop of methyl orange in cavities #1 and #2.
3. Place one drop of bromothymol blue in cavities #5 and #6.
4. Place one drop of phenolphthalein in cavities #9 and #10.
5. Carefully add one drop of pH 1 to cavities #1, #5 and #9.
6. Carefully add one drop of pH 13 to cavities #2, #6 and #10.

|  |  |  |  |
| --- | --- | --- | --- |
| Indicator | Color of indicator | Color in pH 1 | Color in pH 13 |
| Methyl orange |  |  |  |
| Bromothymol blue |  |  |  |
| Phenolphthalein |  |  |  |

Part D: Determining pH Range of Indicators

1. Place 1 drop of methyl orange in each cavity numbered 1-7.
2. Carefully 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. Carefully 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.
5. Place 1 drop of phenolphthalein in each cavity numbered 1-7.
6. Carefully 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 procedure B agree with the pH ranges listed on table M? Explain.**

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