Read pg. 245-247 to fill in the notes

**pH can be measured using:**

1. Acid-base indicators
2. pH meter

**An acid-base indicator is:**

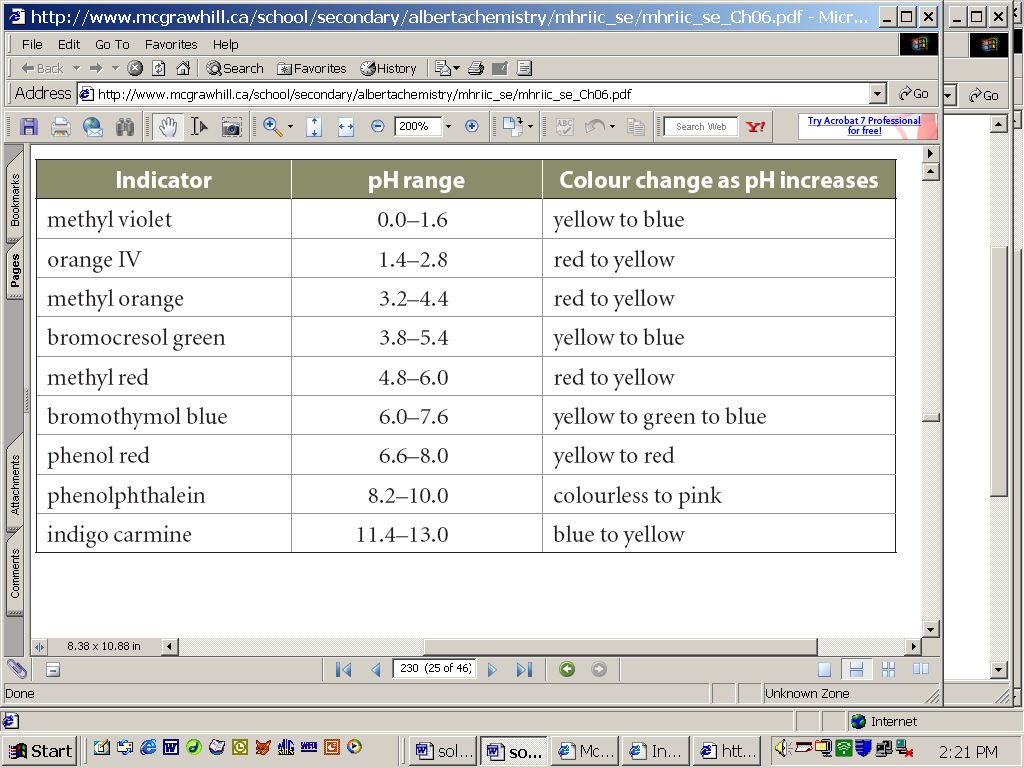
**They are unique chemicals because:**

Some examples are:

* litmus paper
* bromothymol blue
* phenophthalein

Each indicator has a specific pH range where it will change color

Look at page 10 in your data booklet to see something similar to the below table



pH meters

* the most precise way of measuring pH
* it has an electrode that compares the [H3O+(aq)] in the solution to a standard and it will give a digital readout of the pH

***Acid-Base Indicators***

Use your table of indicators, data booklet pg.10 (and in your notes), to answer the following questions:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **pH** | **colour of orange IV** | **colour of bromocresol green** | **colour of bromothymol blue** | **colour of phenol red** |
| 1.0 |  |  |  |  |
| 4.2 |  |  |  |  |
| 5.8 |  |  |  |  |
| 9.0 |  |  |  |  |

* 1. Use the results displayed below to determine the pH ranges of the solutions.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Solution** | **colour of bromocresol green** | **colour of bromothymol blue** | **colour of phenolphthalein** | **pH** |
| A | yellow | yellow | colourless |  |
| B | blue | blue | pink |  |
| C | blue | blue | colourless |  |
| D | green | yellow | colourless |  |

* 1. What indicator could you use to distinguish between two solutions, one that has a pH of 8 and one that has a pH of 11?
  2. Using three indicators, design a procedure that would be able to identify four solutions that have pHs of 3, 6, 8, and 11, respectively