**Select a bio instrument.**

Litmus paper

**For the specific instrument select define its:**

1. **Measurand**

Litmus paper measures the pH of a substance.

1. **Primary Sensing Element**

The paper itself is the primary sensing element for Litmus testing.

1. **Variable Conversion Element**

The variable conversion element is 7-hydroxyphenoxazone, a weakly basic chemical pigment.

It loses hydrogen atoms when introduced to acidic substances.

1. **Signal Processing Element**

The signal processing element would be the process of the chemical losing its hydrogen atoms. Because of its basic nature, more of the 7-hydroxyphenoxazone molecules lose hydrogen atoms when the tested liquid is more acidic. This causes the pigmentation of the chemical to change.

1. **Output Displace Element**

The output is the change in pigmentation of a concentration of all the 7-hydroxyphenoxazone molecules on the surface of the paper. The higher the acidity of the substance, the higher the concentration of the molecules that lose their hydrogen atom, and subsequently higher the concentration of the molecules that change color. A more intense color change indicates a lower pH.