Electronic Measurements and Instrumentation

CRO

function generators

Signal generators

Ammeters

voltmeters

ohmmeters

Performance Characteristics

There are two types of performance characteristics exist in instruments. They are

- Static characteristics → unvarying process conditions (t - constant)
- Dynamic characteristics → varying process conditions ($t \rightarrow$ vary) $\frac{dt}{}$

Static Characteristics

1. Instrument → A device.
2. Measurement → Process
3. Accuracy → closeness / exactness
4. Resolution → Small change
5. Precision → successive values should not differ.
6. Expected value → Expecting to measure.
7. Error → 10, 9 → 1 → diff b/w Expected & measured.
8. Sensitivity → Ratio of $\frac{dV_0}{dV_i}$

10 (✓) 9

	X	✓
1	10	10
2	9	10
3	8	10
4	9	9
5	10	10

1. Instrument:

   A device or mechanism used to determine the present value of the quantity under measurement.

2. Measurement:

   The process of determining the amount, degree or capacity by comparison with the accepted standards of the system units being used.

3. Accuracy:

   The degree of exactness/ closeness of a measurement compared to the expected or desired value.

4. Resolution:

   The smallest change in a measured variable to which an instrument will respond.

5. **Precision:**

   A measure of consistency or repeatability of measurements (i.e., successive readings do not differ).

6. **Expected value:**

   The design value, i.e., the most portable value that calculations indicate one should expect to measure.

7. **Error:**

   The deviation of the true value from the desired value.

8. **Sensitivity:**

   The ratio of the change in output of the instrument to a change of input or measured variable.