

INSTRUMENTS PERFORMANCE CHARACTERISTICS

Linearity:-

Normally desirable that the output reading of an instrument is linearly proportional to the quantity being measured.

Sensitivity of measurement:-

-scale deflection/value of measured producing deflection

Threshold:-

-minimum level of input

Resolution:-

-absolute value

-finely output is divided.

Sensitivity to disturbance:-

-zero drift

-sensitivity drift

-zero drift coefficient

Hysteresis effects:-

-Non-coincidence b/w loading and non-loading curves

-maximum input and maximum output hysteresis

Dead space:-

-range of different input values

-Backlash

Dynamic characteristics of instruments:-

-behavior

-time to attain steadystate

Zero order instruments:-

- $A_o q_o = B_o q_i$

-potentiometer

First Order instrument:-

$$Q_o = (kq_i / 1 + \tau D)$$

-Time constant

Necessity for calibration:-

-mechanical wear

-effects of dirt

-fumes and chemicals