* **Calibration:**

Relationship b/w instrument respose and analyte concentration.

$y = f(x)$

y: instrument response
x: Analyte concentration

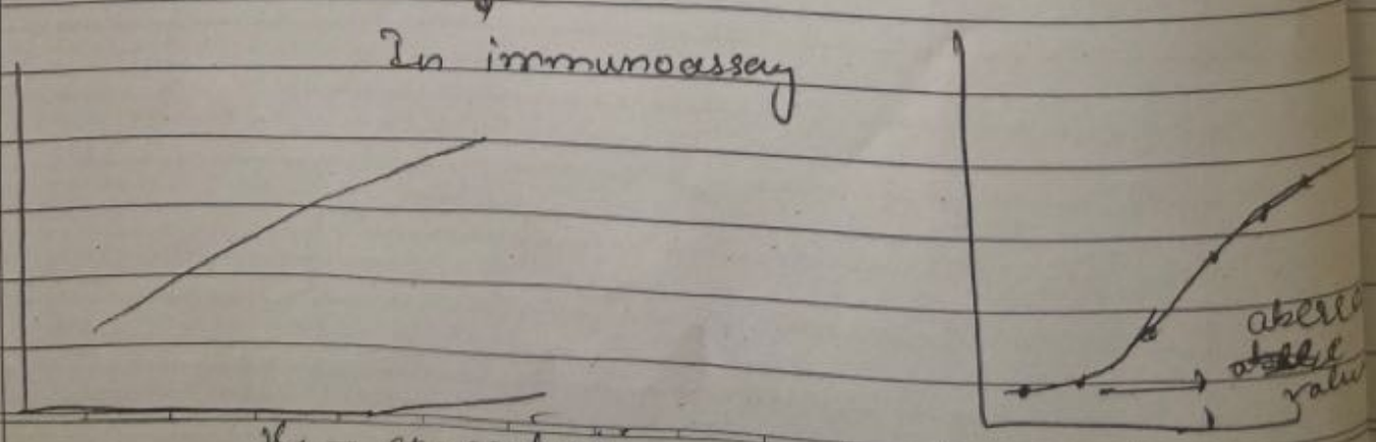
→ Relationship is established by analysing sample ε known quantities of analytes (calibrator)

pure chemical standards → for reference method not influenced by matrix effects

Sample ε known quantities in typical matrix → routine method.

→ Calibration function may be
linear,
curved,
special form → spline curve

In immunoassay



→ If calibration function doesn't reflect correct relationship b/w instrument response or and analyte concentration

↓

systemic error / bias.

→ Precision of analytical method depends on stability of Instrument response for given quantity of analyte

→ If the calibration is linear, and the imprecision of signal response is same over analytical measurement range,

↓

Analytical SD (SDA) is tend to be constant over that range.

ex → SD for Na in lower range (135.0) = 2 mmol/L

SD " " " higher " (156.0) = 2 "

SDA is constant for 135 - 156 for Sodium.

→ If imprecision is proportionally to signal response

↓

SD tends to ↑ proportionally to conc.

↓

Relative imprecision ($CV = SD/\bar{x}$) is constant over that range.

ex. SD for ALT lower range : 3 U/dL

higher range : 6 "