Electrical and Electronic measurement and Instrumentation.

Syllabus:-

1) Error Analysis.

2) Basic Instruments.

   a) M.C.Type → i) PMMC, ii) EMMC

   b) M.I.Type → i) Attraction type, ii) Repulsion type.

3) Extension of Basic instruments.

4) Electrostatic Voltmeters.

5) Thermal Instruments.

6) Rectifier type of Instruments —

   a) HWR type.

   b) FWR type.

7) Measurement of 'R' 'L' and 'C' [Both AC & DC Bridges]

8) Measurent of Power

9) Measurement of Energy

10) Potentiometers.

11) Q-meter.

12) measurement of frequency and Powerfactor.

13) D.V.M's.

14) C.R.O.

15) Instrument Transformers.

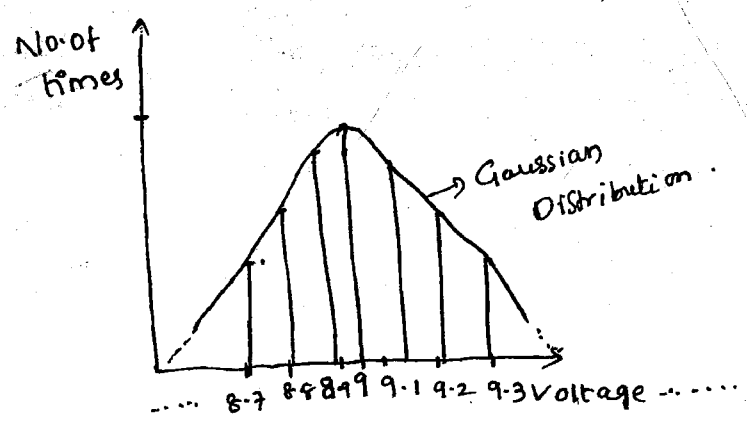
16) Transducers.

17) Units and Dimensions.

⇒ Guass is the scientest who is identify the precision or repeated values of any meters in measurement of any quantity

⇒ Micket Faraday (60 to 70%) is Father of Electrical Engg.

Gaussian Distribution:



10th class Engg

$$\sigma = S.D = \sqrt{\frac{d_1^2 + d_2^2 + \cdots + d_n^2}{(n-1) \text{ or } n}}$$

→ Error.

Mode → Precision.

1. Error Analysis

Error :- The deviation of measured Quantity from the true value is called Error.

⇒ Error is represented with 'ϵ'

$$\epsilon = A_m - A_t$$

A_t → True.

A_m → measured

⇒ The Errors broadly classified into two types.

1) Static Error
2) Dynamic Error.

(1) Static Error :- The Error which is independent of time is called Static Error.

(2) Dynamic Error :- The Error which depends on time is called Dynamic Error

↳ Dynamic Error is not there in Syllabus]

⇒ $\epsilon = +ve \quad A_m > A_t$.

$\epsilon = -ve \quad A_m < A_t$.

Correction Factor :-

The value which we are added or substracted from "measured value" in order to get true value is called Correction Factor.

Again C.F. may be +ve when the $\epsilon = -ve$

−ve when the $\epsilon = +ve$.

$$C.F = -(\epsilon)$$