



SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

COIMBATORE-35



Accredited by NBA-AICTE and Accredited by NAAC – UGC with A++ Grade

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE NAME: 23EET206/ Measurements and Instrumentation

II YEAR / IV SEMESTER

UNIT 1- FUNDAMENTALS OF MEASUREMENT

Topic 3 – Static and Dynamic Characteristics of measurement systems



SUCCESSFUL STUDENT

Positive
Attitude

Professionally
Groomed

Socially
Interactive

Technically
Skillful



Static Characteristics

Accuracy: It is the closeness with which an instrument reading approaches the true value of the quantity measured.

Precision : The degree to which repeated measurements show the same results.

Low Accuracy
Low Precision



Low Accuracy
High Precision



High Accuracy
Low Precision



High Accuracy
High Precision



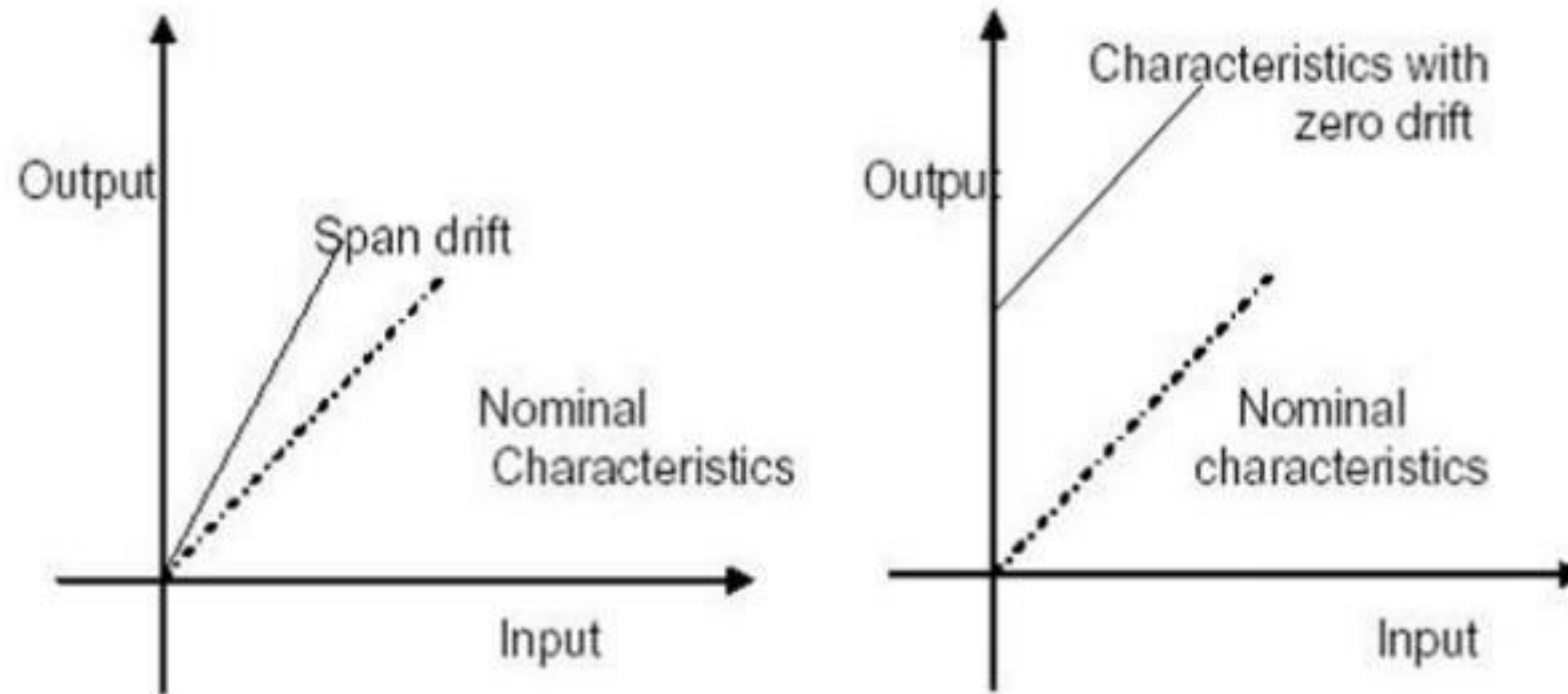


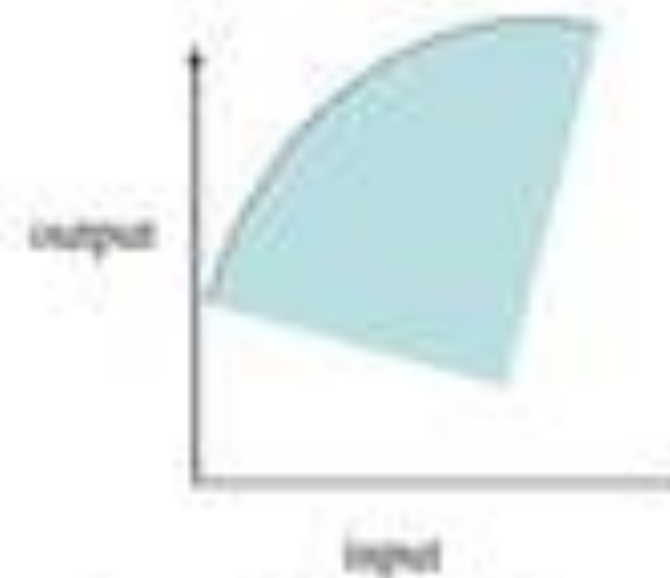
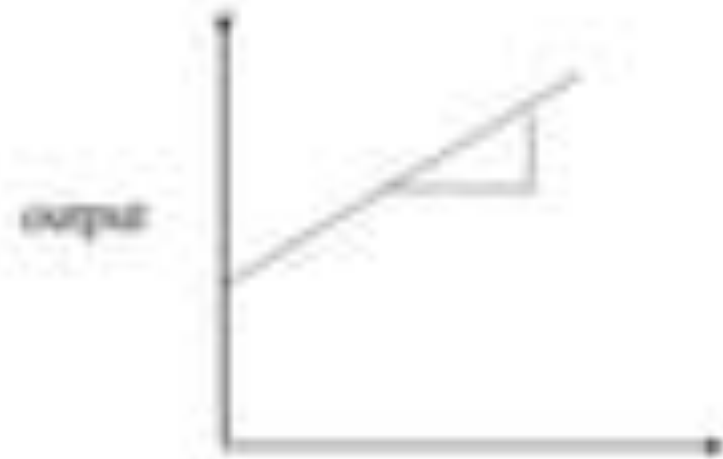
Fig. 4.1 Span Drift and Zero Drift



Static Characteristics

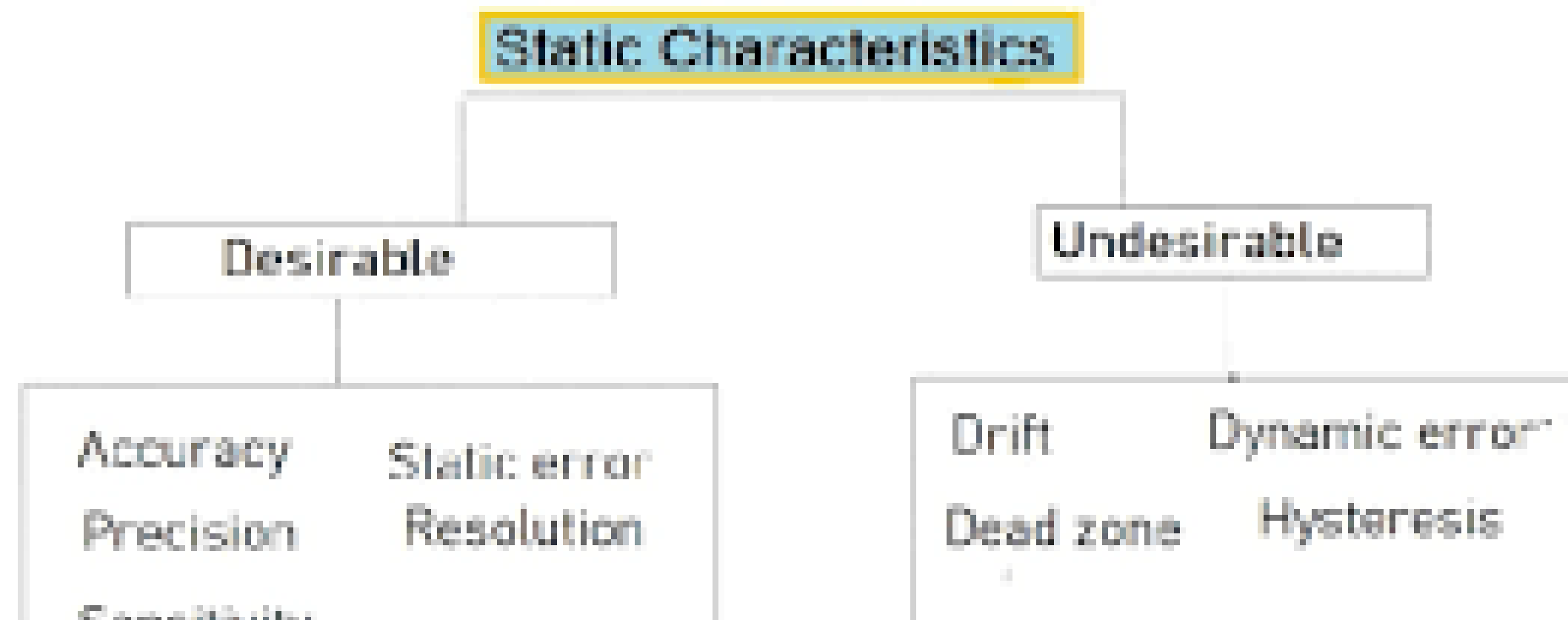
Resolution or Discrimination: The smallest detectable incremental change of the input parameter that can be detected in the output signal. Eg: Scale, Multi range meters.

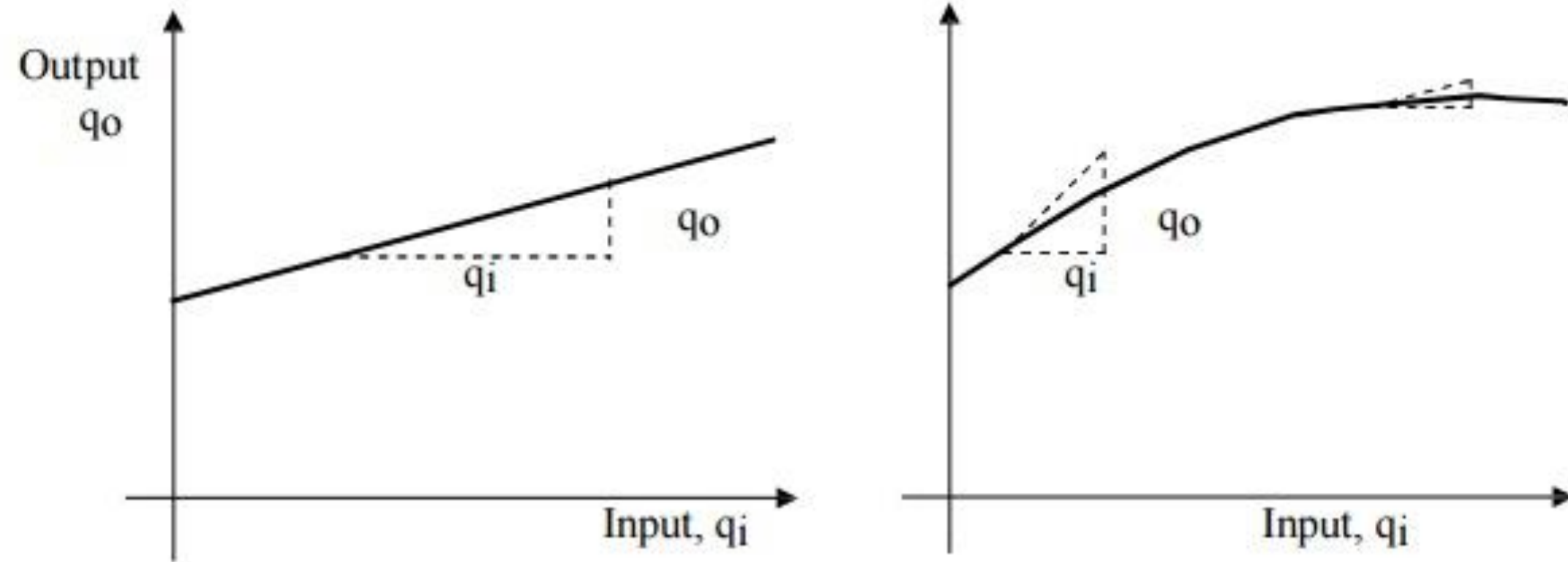
Sensitivity: For an instrument or sensor with input x and output y , Sensitivity = dy/dx



Static sensitivity = Infinitesimal change in output / infinitesimal change in input

Performance Characteristics of Instruments





$$\text{Sensitivity} = \frac{\text{Infinitesimal change in output}}{\text{Infinitesimal change in input}}$$
$$= \frac{\dot{a}q_o}{\dot{a}q_i}$$





ASSESSMENT



©
publicdomainvectors.org





REFERENCE

TEXT BOOKS

- T1 A. K. Sawhney, “A Course in Electrical & Electronic Measurements & Instrumentation”, Dhanpat Rai & CO., New Delhi, 2022.**
- T2 S. Gupta and J. John , "Virtual Instrumentation using Lab VIEW", Tata McGraw-Hill Publishing Company Limited, New Delhi, 2010.**

REFERENCES

- R1 David A.Bell, "Electronic Instrumentation and Measurements”, Oxford Higher Education, 2013**
- R2 Bouwens A J, “Digital Instrumentation”, Tata Mc Graw Hill, New Delhi2016**
- R3 Martin U. Reissland, “Electrical Measurement – Fundamental Concepts and Applications”, New Age International (P) Ltd., 2015**
- R4 J. B. Gupta, “A Course in Electronic and Electrical Measurements and Instrumentation”, S. K. Kataria & Sons, Delhi, 2013**
- R5 M. S. Anand, “Electronics Instruments and Instrumentation Technology”, Prentice Hall India, NewDelhi, 2012.**

WEB REFERENCES

- W1 https://pasargadabzar.com/wp-content/uploads/2022/04/Morris_Langari-1.pdf**
- W2 https://www.vssut.ac.in/lecture_notes/lecture1423813026.pdf**
- W3 <https://hombredelamancha.com/products/ebook-electrical-and-electronic-measurements-and-instrumentation?srsltid=AfmBOorTb5k9Ga1rsImj69-l3SximYYra7U8VhGcqYahqsfk9BR9rC7k>**



THANK YOU!!