



PERFORMANCE CHARACTERISTICS OF INSTRUMENTS (STATIC CHARACTERISTICS)



CONTENTS-CLASS-5



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PERFORMANCE CHARACTERISTICS OF INSTRUMENTS



- 1. Static Characteristics**
- 2. Dynamic Characteristics**



STATIC CHARACTERISTICS OF AN INSTRUMENT



1. Static Characteristics

- Considered for instruments which are used to measure an unvarying process condition.
- **Obtained by Calibration.**



DYNAMIC CHARACTERISTICS OF AN INSTRUMENT

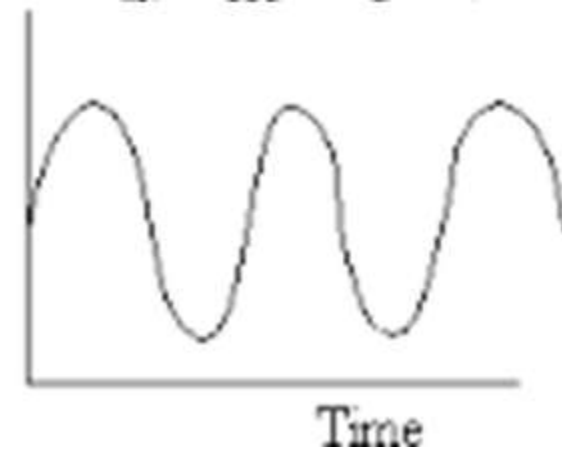
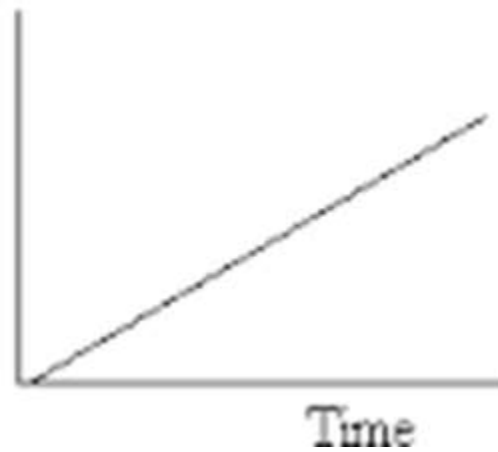
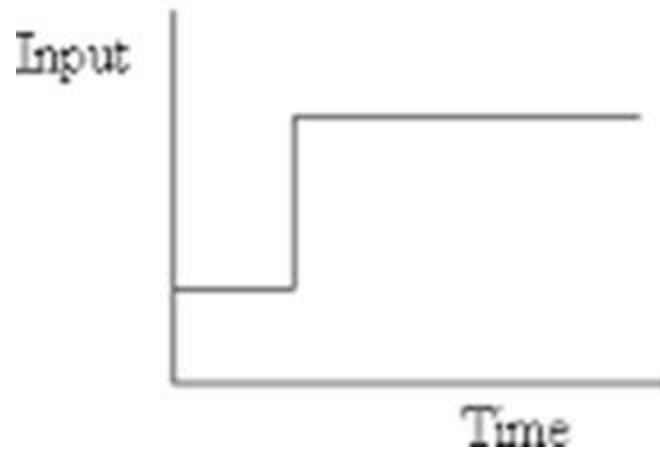


1. Dynamic Characteristics

- Dynamic behavior of an instrument can be determined by applying some form of known and predetermined input to its primary element and then study the output.

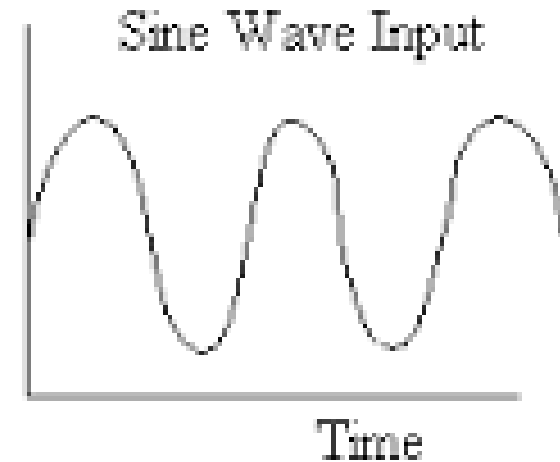
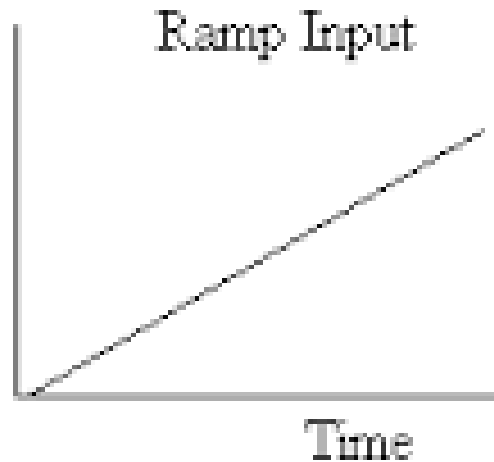
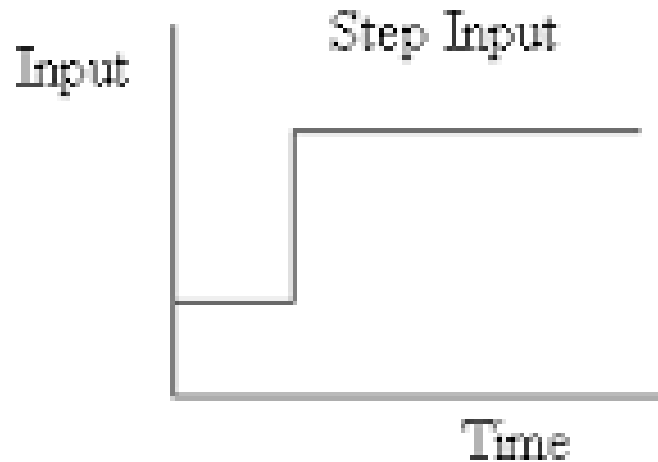


Three types of Inputs





Three types of Inputs



1. Step input
2. Linear input
3. Sinusoidal input



DYNAMIC CHARACTERISTICS OF AN INSTRUMENT



Speed of Response

Lag

Fidelity

Dynamic Error



SPEED OF RESPONSE



- It is the rapidity with which an instrument responds to change in the measured quantity.





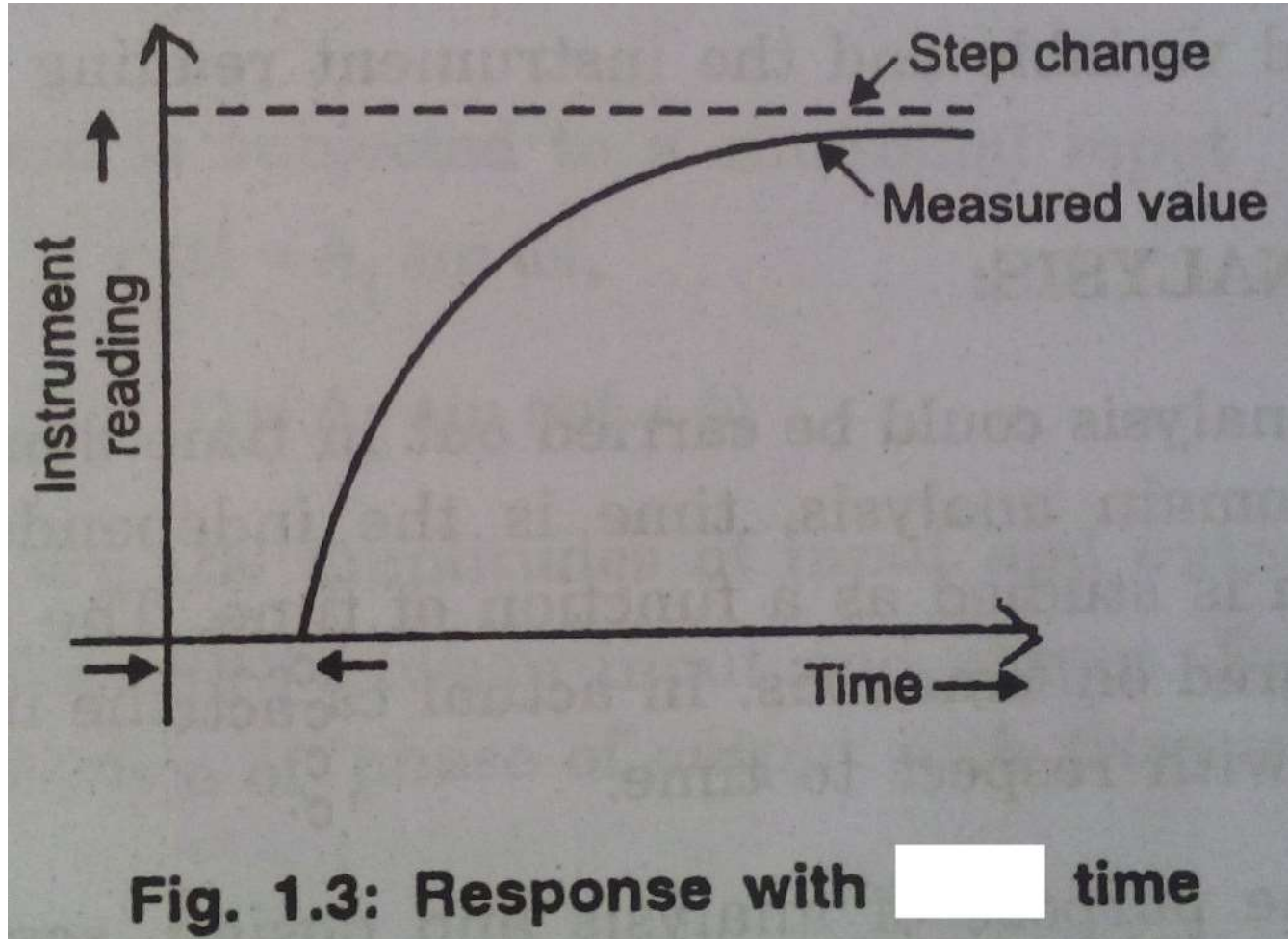
LAG

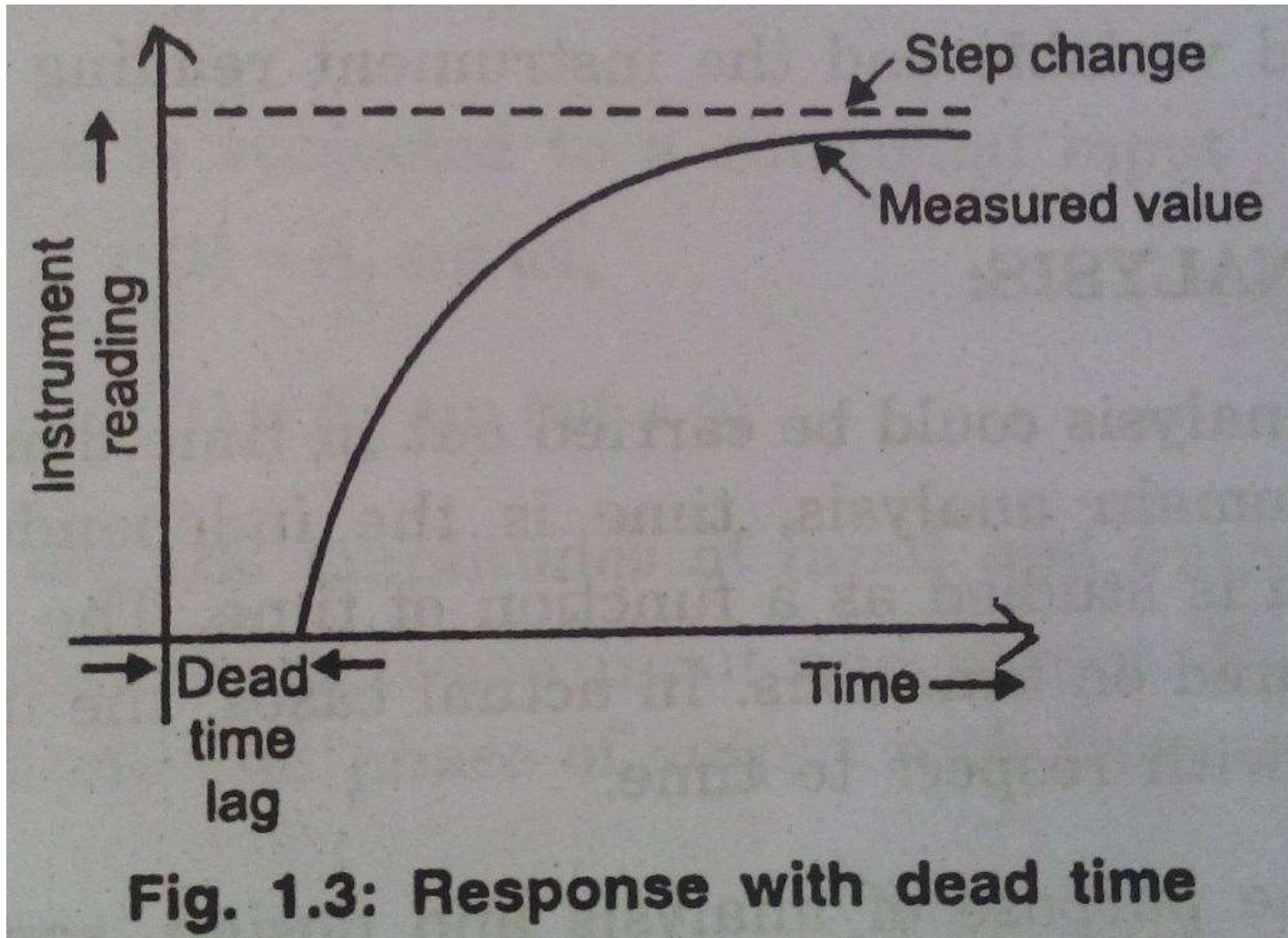


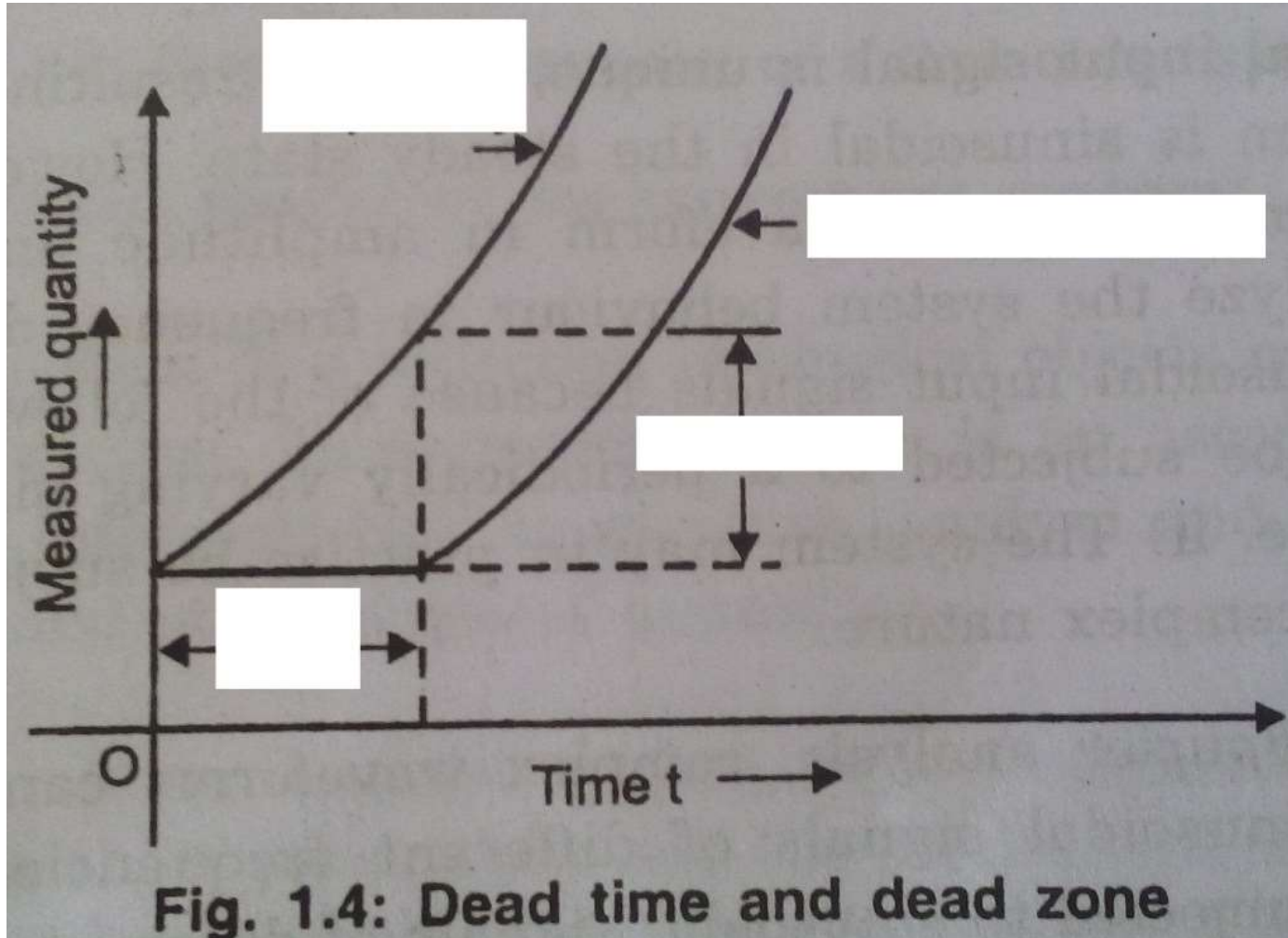
- It is the retardation or delay in the response of an instrument to changes in the measured quantity.

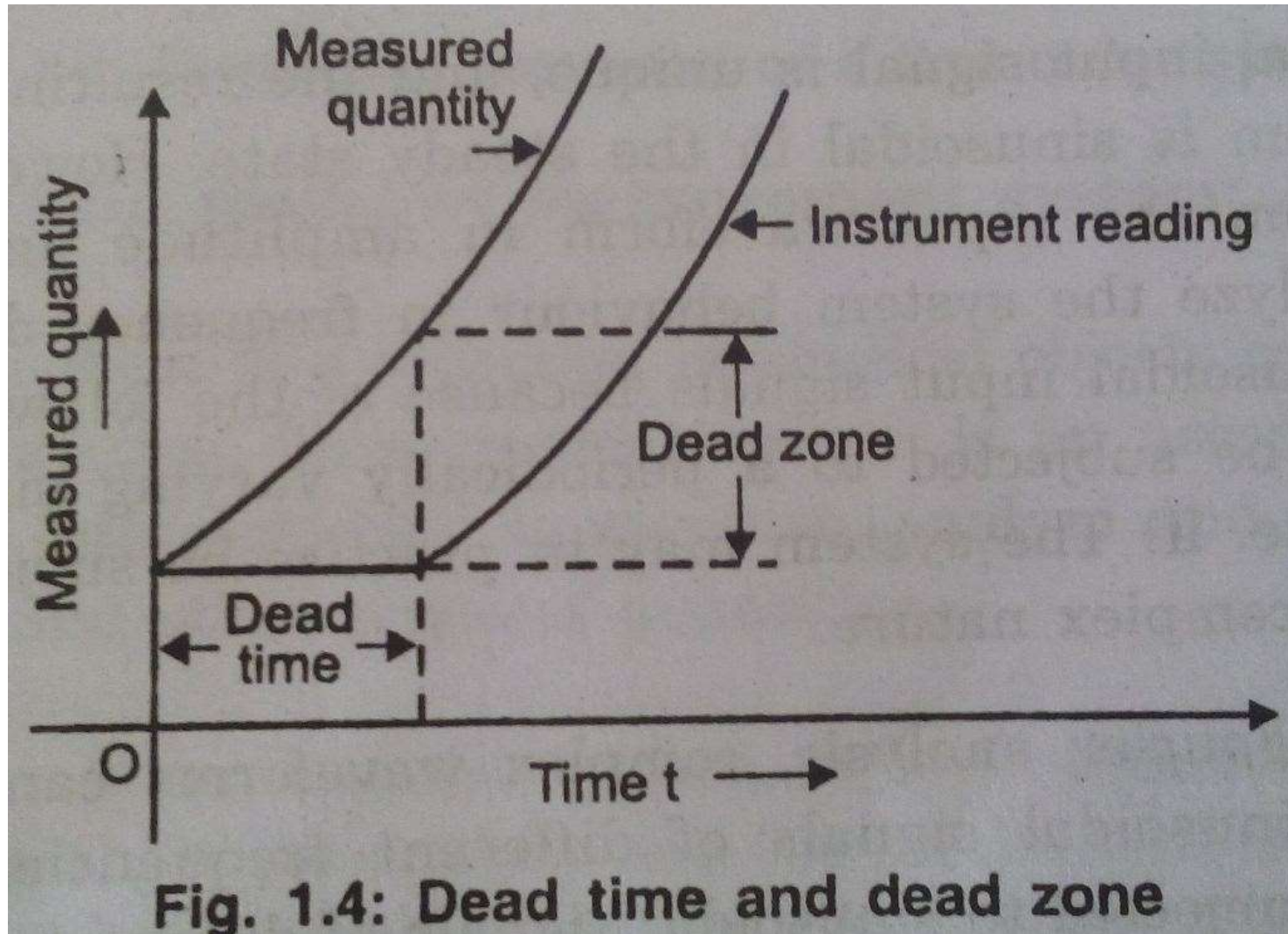
Two Types

1. Retardation type – Response begins immediately
 2. Time delay type – Dead time lag
- Instruments having appreciable dead time are not good for measuring rapidly fluctuating variable.











VIDEO SHOW



A Video History of Photography

<https://www.youtube.com/watch?v=mKX-eK2Wo7k>



FIDELITY



- It is determined by the fact that how closely the instrument reading follows the measured value.
- It is the degree to which an instrument indicates the changes in measured variable without dynamic error.



DYNAMIC ERROR



- It is the difference between the true value of a quantity changing with time.
- The difference between measured variable and the instrument reading if no static error is assumed.



SUMMARY



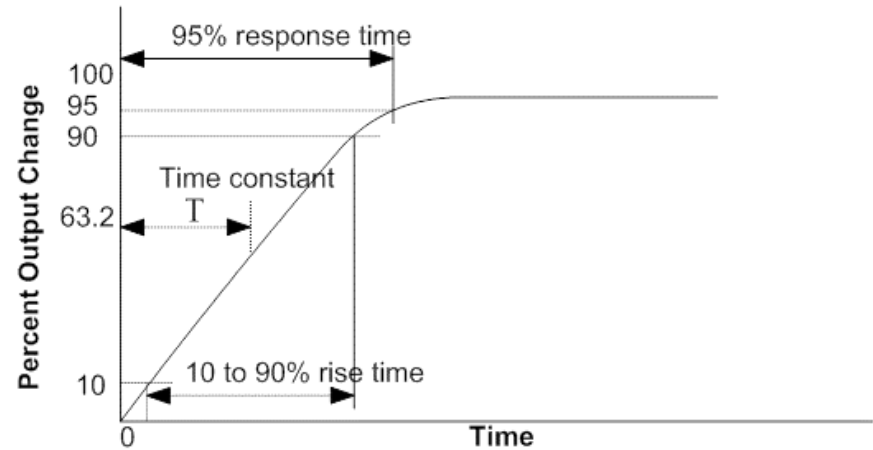
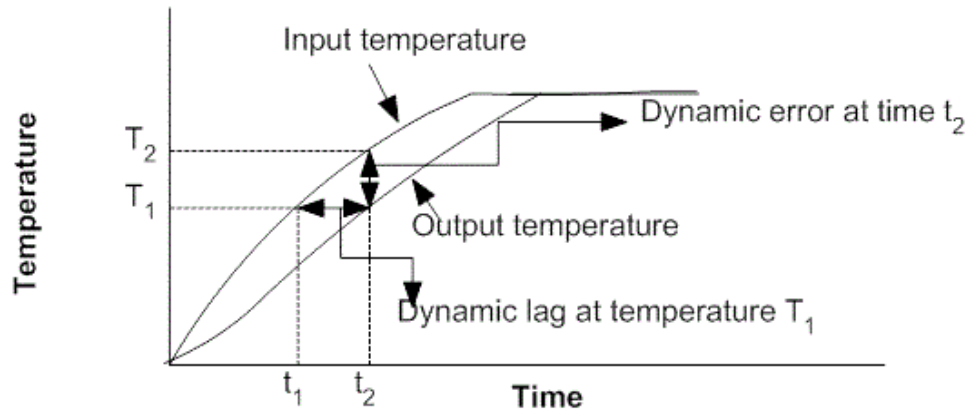
STUDENT'S CORNER



Work sheet



1. What are these curves?

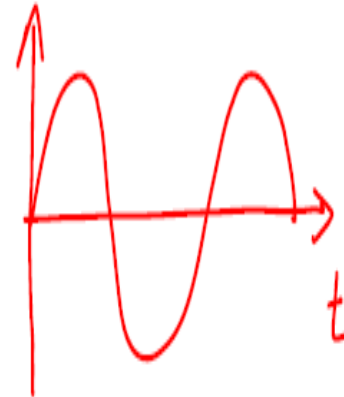
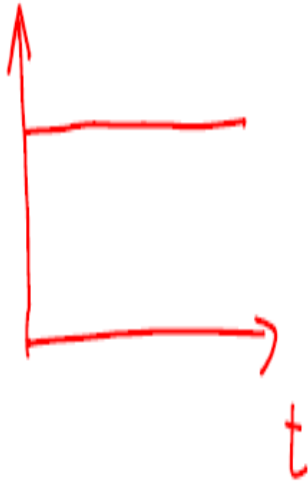




Work sheet



2. Name the function





THANK YOU