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Engineering College – Department of Mechanical Engineering

Name:-

ID:-

(MECH350) 1st Exam Instrumentation and Measurements. (Time: 75Min)
28 Feb 2021

1. Answer the following Questions: -
   a) Explain what is meant by the following and give example for each: -
      a. active instruments
      b. passive instruments (2Marks)

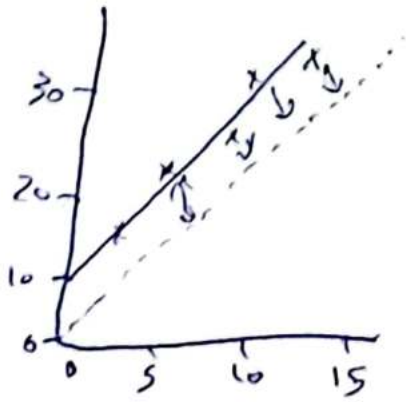
b) Explain the main difference between static and dynamic characteristics of measuring instruments, give example for each? (2Marks)

1- the static characteristics ar defind for the instruments which measu quantities (input) which donot vary wi time.

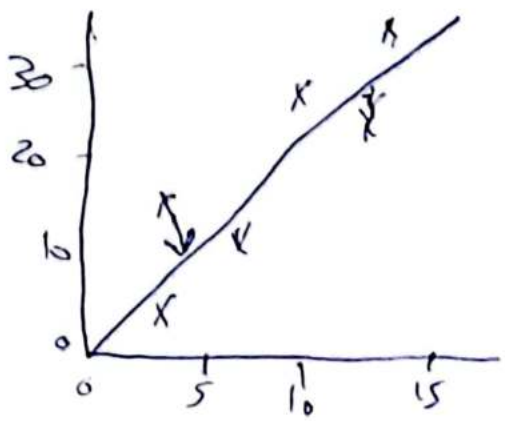
2- the relationship between the system input and output whe the measured (input) is varying rapidly

c) Compare between systematic error and random error, illustrate by sketch? (2Marks)

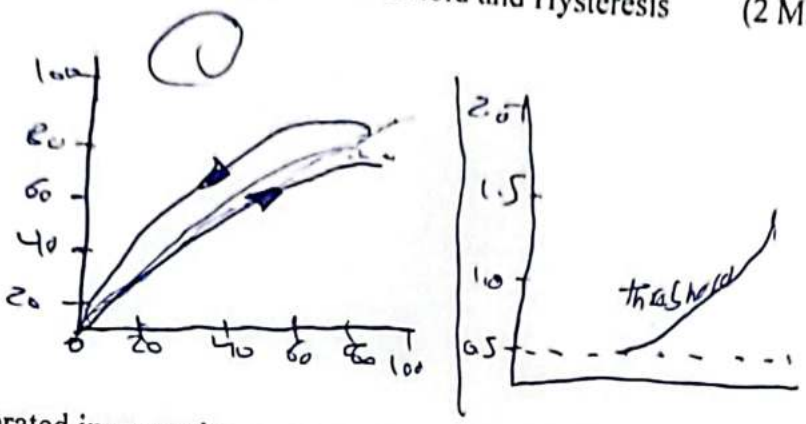
systematic error.



random error



2. Draw sketches illustrating the difference between threshold and Hysteresis (2 Mark)



3. A spring balance is calibrated in an environment at a temperature of 15°C and has the following deflection/load characteristic: -.

Load (Kg)	0	1	2	3
Deflection (mm)	0	15	30	45

=15

Is then used in an environment at a temperature of 30°C and the following deflection/load characteristic is measured: -

Load (Kg)	0	1	2	3
Deflection (mm)	4	25	46	67

=7

Determine the zero drift and sensitivity drift per °C change in ambient temperature?

(3 Marks)

$\frac{6}{100}$

Zero drift = 4

Sensitivity 21 - 15 = 6

Per C° = 0.06%