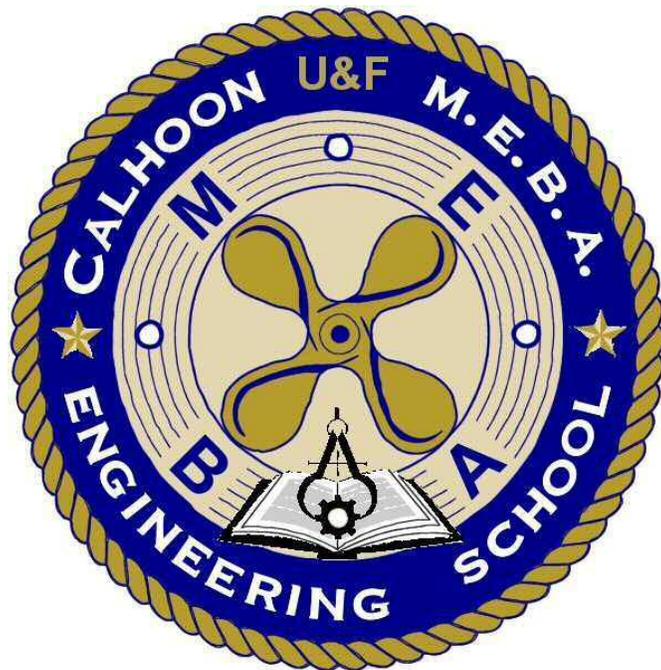


*Calhoun MEBA Engineering School*

**Study Guide  
for Proficiency  
Testing  
Instrumentation**



The difference between set-point and the measured variable is known as what?

What change in resistance occurs to a PT-100 RTD having a temperature coefficient of resistance of 0.00385 ohms/ohm/deg C between -30 C and +150 C?

What is a 60 C rise in temperature expressed in Fahrenheit?

What is the temperature of a PT-100 RTD, having a temperature coefficient of resistance of 0.00385 ohms/ohm/deg C, when the measured resistance is 167.5 ohms?

Using the table in figure 01, what is the voltage developed by a K-type thermocouple having its reference junction at 0 C and the measuring junction at 250 C:

A small proportional band is the same as what action?

Set-point is defined as:

Reset action is also referred to as:

A signal representing a variable which may be continuously observed and represented is best termed:

What temperature sensing technique is considered to be non-contact?

A pressure switch on an air receiver controls an associated air compressor. The pressure switch starts the compressor at 95 psig and stops the compressor at 125 psig. The difference between these two values is the:

Stray signals in a control system, not related to the process is called:

Thermocouples may be spring loaded to bear firmly against the well to:

List direct methods of measuring liquid level.

What is the standard output range for electrical instrument transmitters?

What is the standard output range for pneumatic instrument transmitters?

When checking the calibration of an instrument, the first information recorded should be:

A 4-20 mA transducer is calibrated to read 40-100 C. What temperature is indicated by a loop current of 18.00 mA?

What are units for mass flow?

The final control element directly affects what part of a control loop?

Control action in which there is a steady linear relationship between output and input may best be characterized as what?

Know the temperature measuring device best used to measure the temperature inside a furnace.

Two general categories of automatic control are?

A LVDT is a transducer for measuring what type of parameter?

The biggest advantage of radiation thermometry is what?

An actuator diaphragm has a 8.5" diameter. What force is developed on the valve stem with an applied pressure of 50 psig?

A 250-ohm load resistor develops what output signal span when inserted into a 4-20 mA instrument loop?

The three basic control actions in a three-mode controller are what?

What is 120 degrees Fahrenheit in degrees Celsius?

The section of a control loop which receives information, processes it, and sends commands to a final control element is:

A thermo-well is what?

The difference between the maximum and minimum values from a device is best described as what?

A 195 psig pressure is roughly what psia?

Pressure is defined as what?

A 4-20 mA current loop with a 24 Vdc supply and an instrument burden of 8 Vdc can support how many 250 ohm loads.

In rotary variable differential transmitter (RVDT) is capable of measuring small:

Perform a linear interpolation for the value 8.45 mA if: 5 mA corresponds to 490 C and 20 mA corresponds to 690 C.

A valve contains packing material to prevent leakage from where?

As the speed (velocity) of a fluid increases through a restriction, the pressure differential across the restriction does what?

The interval of time between the initiation of a change in the control variable and the response of the measured variable is called what is control vernacular?

A tube 3" in diameter and 10" tall is filled with mercury. A second tube of 6" in diameter and 10" tall is filled with mercury. The ratio of pressure at the bottom of the second tube as compared to the pressure at the bottom of the first tube is called what?

Control action which the output is only related to the time integral of the error defines what?

Undesirable and prolonged periodic excursions which occurs after the external stimuli disappears, defines what in a control loop?

An absolute-pressure gauge reads 28.9 psia. What is the pressure reading shown on a in-Hg-gauge pressure gauge?

As the temperature rises in a fixed closed vessel, the pressure does what?

A pressure gauge reads 0 psig. What is the same pressure reading on a vacuum gauge?

A snubber is what type of device?

Pressure switches have either separate cut-in and cut-out adjustments, a pressure setting and a differential setting, or a built-in hysteresis. This is done why?

What is the standard temperature coefficient of resistance for a platinum Pt-100 RTD?

What factors are necessary in selecting the proper control valve for an application?

Parallax error is associated with what types of devices?

A one-ohm sampling resistor in a 4-20 mA current loop reads what value when the loop signal is 50%?

A direct-acting valve assembly has what flow characteristic with regard to stem-travel?

A U-tube manometer has one leg which reads +5" and another leg which reads -5". If the liquid sg is 1.75, what is the differential pressure?

A system's dead-band is the range of input signals which cause what?

Mechanical backlash can cause what affects concerning control?

A final control element which has only two positions is capable of what type of control?

Hydrostatic head can be measured with what?

A rota-meter measures what type of parameter?

Temperature is a measure of what type of energy?

In a PID controller, what action is responsible for an increasing output signal when a constant error signal exists?

Know the parts of a control valve assembly.

If a material property increases as temperature decreases, it has what type of temperature coefficient?

Know the components of a typical process control loop.

In a PID controller, what action is responsible for producing the output signal when the error changes rapidly?

A load cell is based upon what type of measuring device?

What is a thermistor?

As a mathematical expression, how are proportional band (PB) and proportion gain (PG) related?

The output of a transmitter is 4-20 mA. The range of the process temperature is 100 degrees F to 600 degrees F. Assuming the transmitter output is directly proportional to its input, what is the temperature of the process if the transmitter outputs 12 mA?

A proportional band of 50% is equal to a proportional gain (PG) of what?

A numericator (or bubbler) is an instrument normally used to indicate what?

The range through which an input can be varied without initiating observable response, defines what?

One time constant is generally considered to be the time which a signal takes to change from a starting value to a value of what?

If one intrinsically safe (IS) barrier is not able to provide the required current to a load in a hazardous area, up to how many others may be added in parallel to achieve the needed rating?

With only proportional action enabled in a controller, what is the output response to a step-change in the input?

In a pneumatic controller, a volume chamber causes what effect?

What component converts a 4-20 mA loop current signal to a 1-5 Vdc signal?

After one time constant passes, \_\_\_\_\_% of the initial difference remains what?

The ratio of the maximum controllable flow through the valve to the minimum controllable flow through the valve defines what?

An H-block for a DP transmitter is used to accomplish what?