

1. What is Instrumentation Engineering and what it is about?

Looks like a simple question but if you answer with simple English, your hr will use your answer to judge your subject knowledge.

2. What is a process variable, set-point, Zero error?

If your HR is from company like ESSAR steels where process control instrumentation is used, he will sure ask this question

3. What are the devices used to measure pressure?

4. What is the need for used 4-20mA signal and why is 0-10V signal not used?

A very famous question asked by experienced HRs

5. Different Types of Control systems?

6. Difference between PLC and DCS.

7. Classification of Feedback Control system.

8. What are the three Laws of Thermocouples?

He or she will expect that you will atleast tell the names of the laws.

1.How is automatic reference junction compensation carried out in temperature recorders?

In automatic reference junction compensation, variable nickel resistor is used. As the temperature changes, so does its resistance. This reference junction compensator is located, so that it will be at the temperature of the reference junction. The reference junction is at the poset where the dissimilar wire of the thermocouple is rejoined. This joint is invariably at the terminal strip of the instrument.

2.What are de-saturators?

When, in some processes, e.g. batch processes, long transient responses are expected during which a sustained deviation is present the controller integral action continuously drives the output to a minimum or maximum value. This phenomenon is called 'integral saturation of the control unit'. When this condition is met, then this unit is de-saturated.

6.How would you choose differential range?

The most common range for differential range for liquid measurement is 0-100. This range is high enough to minimize the errors caused by unequal heads in the seal chambers. It is also dependent on

the differences in the temperature of the load lines. The 100 range permits an increased in capacity up to 400. While decrease down up to 20 by merely changing the range tubes or range adjustments.

- What is the use of double seated valve?

[View Answer](#)

Answer

In double seated valves the upward and downward forces on the plug due to reduction of fluid pressure are nearly equalized. It is generally used on bigger size valves and high pressure systems. Actuator forces required are less.

- What is zener diode? What is voltage regulator?

[View Answer](#)

Answer

The breakdown region of a p-n diode can be made very sharp and almost vertical diodes with almost vertical breakdown region are known as zener diodes. A zener diode operating in the breakdown region is equivalent to a battery. Because of this current through zener diode can change but the voltage remains constant. It is this constant voltage that has made the zener diode an important device in voltage regulation.

Voltage regulator: The output remains constant despite changes in the input voltage due to zener effect.

- Name different types of bourdon tubes.

[View Answer](#)

Answer

Types of bourdon tubes:

1. C type
2. Spiral
3. Helix

-

[View Answer](#)

Answer

- How to use level transmitter in closed tank application?

[View Answer](#)

Answer

In closed systems, the transmitter location is restricted by the maximum allowable distance above the lower tap. In pressurized systems, this is the same as the 1 atmosphere equivalent seen previously. In sub-atmospheric systems (vacuum systems), the transmitter should be mounted at or below the lower tap. This ensures the transmitter

always sees a positive pressure on both the measurement and the reference sides.
In two seal systems, the distance between the taps becomes the reference offset from zero. The calculations are the same regardless of where the transmitter is mounted.

- What is intrinsically safe system?

[View Answer](#)

Answer

Intrinsic safety is a technique for designing electrical equipment for safe use in locations made hazardous by the presence of flammable gas or vapours in the air. Intrinsically safe circuit is one in which any spark or thermal effect produce either normally or under specified fault conditions is incapable of causing ignition of a specified gas or vapour in air mixture at the most ignited concentration.

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[View Answer](#)

Answer

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[View Answer](#)

Answer

- What is Difference between PLC and CNC?

[View Answer](#)

Answer

CNC (Computer Numerical Control) is a particular application usually to control a multi axis machine tool such as a milling machine or a lathe but also could be a tube bending machine punch press or similar. The CNC controller is usually a purpose built controller using a micro computer but could be a general purpose computer or a PLC. The forerunner was NC (Numerical Control) before computers were readily available, it used solid state logic and relays, timers etc to provide the application.

A PLC (Programable Logic Controller) is a general purpose logic controller specifically designed to allow the user to create their own application. They select appropriate I/O (Inputs Outputs) and perhaps function modules for purposes such as communications and multi axis servo control and program the PLC to perform the required functions.

- what is difference between differial pressure & delta pressure?

[View Answer](#)

Answer

Differencial pressure means differanc between high pressure & low pressure
delta pressure means it is the pressure drop..

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- Why is the orifice tab provided?

[View Answer](#)

Answer

Following reasons justify for providing orifice tab:

1. Indication of orifice plate in a line
2. The orifice diameter is marked on it.
3. The material of the orifice plate.

- 4. The tag number of the orifice plate.
- 5. To mark the inlet of an orifice.

- What is furnace draft control?

[View Answer](#)

Answer

Balanced draft boilers are generally used negative furnace pressure. When both forced draft and induced draft are used together, at some point in the system the pressure will be same as that of atmosphere. Therefore the furnace pressure must be negative to prevent hot gas leakage. Excessive vacuum in the furnace however produces heat losses through air infiltration. The most desirable condition is that the one have a very slight negative pressure of the top of furnace.

- How do you identify an orifice in the pipeline?

[View Answer](#)

Answer

An orifice tab is welded on the orifice plate which extends out of the line giving an indication of the orifice plate.

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[View Answer](#)

Answer

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[View Answer](#)

Answer

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[View Answer](#)

Answer

- How D.P. transmitter can be applied to close tank?

[View Answer](#)

Answer

In closed tank, bottom of the tank is connected to the high pressure side of the transmitter. Top of tank is connected to the lower pressure side of the transmitter. In this way vessel pressure can be measured.

- How to trim the pressure transmitter?

[View Answer](#)

Answer

Ensure that you have the necessary document on your hand such as PTW.
Connect a HART Communicator, then close the Tx isolation valve and open the VENT isolation to atmosphere.
Apply LRV and check w/ HART Comm, if the LRV is out, perform TRIM function using HART 375/475

- What are primary elements of measuring pressure? Which type of pressure can be measured by these elements?

[View Answer](#)

Answer

Primary elements of measuring pressure are:

- a. Bourdon Tube
- b. Diaphragm
- c. Capsule
- d. Bellows
- e. Pressure springs

These elements are known as elastic deformation pressure elements.

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- if we have 450 mm height boiler drum level ,so what is span & zero value for a dpt transmitter?

[View Answer](#)

Answer

zero will be -400mm and span will be LRV will be -400mm and URV will be 0 mm.

- How can a D.P. transmitter be calibrated?

[View Answer](#)

Answer

D.P. transmitter can be calibrated using following steps:

1. Adjust zero of Xmtrs.
2. Perform static pressure test: Give equal pressure on both sides of transmitter. Zero should not shift either side. If the zero shifts then carry out static alignment.
3. Perform vacuum test: Apply equal vacuum to both the sides. Zero should not shift.
4. Calibration procedure: Give 20 psi air supply to the transmitter and vent L.P. side to atmosphere. Connect output of the instrument to the standard test gauge. Adjust zero. Apply required pressure to the high pressure side and adjust the span. Adjust zero gain if necessary.

- What is solenoid valve? Where it is used?

[View Answer](#)**Answer**

A solenoid is electrically operated valve. It consists of solenoid coil in which magnetic plunger moves. This plunger is connected to the plug and tends to open or close the valve. There are two types of solenoid valves:

1. Normally Open
2. Normally closed

Use: It is used for safety purpose in different electric work

- How will you test a transistor with a multimeter?

[View Answer](#)**Answer**

1. Emitter +ve of meter and base -ve output =Low resistance
2. Emitter -ve of meter and base +ve output =High resistance
3. Collector +ve and base -ve output =Low
4. Collector -ve and base +ve output =Low

Emitter: Collector = High resistance

PNP: Opposite Results

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- Name different parts of a pressure gauge. Explain the use of hair spring in the pressure gauge.

[View Answer](#)

Answer

Pressure gauge includes following components:

- a. 'C' type bourdon tube.
- b. Connecting link
- c. Sector gear
- d. Pinion Gear
- e. Hair spring
- f. Pointer
- g. Dial

Use of hair spring: Hair spring is responsible for controlling torque. It is also used to eliminate any play into linkages.

- What are the automatic controller MODES?

[View Answer](#)

Answer

Following are the mode of control. Ratio Control, PID Control, PI Control, ON/OFF Control, Cascade Control, Override Control, Feedback Control, Feed Forward Control. These control are can be set in to MAN and AUTO Mode, If this in MANUAL the mode of control is disable, If this is in AUTO the mode of control is enable.

- Explain working principle of lvdt?

[View Answer](#)

Answer

When an AC excitation signal is applied to the Primary Coil (P), voltages are induced in the two Secondary Coils (S). The MAGNETIC CORE inside the COIL WINDING ASSEMBLY provides

the magnetic flux path linking the Primary and secondary Coils. Since the two voltages are of opposite polarity, the Secondary Coils are connected series opposing in the center, or Null Position. The output voltages are equal and opposite in polarity and, therefore, the output voltage is zero. The Null Position of an LVDT is extremely stable and repeatable.

When the MAGNETIC CORE is displaced from the Null Position, an electromagnetic imbalance occurs. This imbalance generates a differential AC output voltage across the Secondary Coils which is linearly proportional to the direction and magnitude of the displacement. As shown in the figure, when the MAGNETIC CORE is moved from the Null Position, the induced voltage in the Secondary Coil, toward which the Core is moved, increases while the induced voltage in the opposite Secondary Coil decreases.

LVDTs possess the inherent ruggedness and durability of a transformer and truly provide infinite resolution in all types of environments. As a result of the superior reliability and accuracy of LVDTs, they are the ideal choice for linear motion control.

- why use MMWC unit?

[View Answer](#)

Answer

milli meter water column used to measure pressure

- What happen if i install my pressure transmitter below the elevation of pipe in natural gas service?

[View Answer](#)

Answer

Pressure transmitter in a gas service shall be installed above pipe line. If it is installed below pipeline, the moisture in the gas service gets trapped in the impulse line and acts like a cushion in your chairs which will provide you erroneous readings lesser than the actual pressure in the pipe line. if pressure transmitter is installed below pipeline, moisture to be collected in a separate condensate point and needs to be drained at a frequent interval .
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- What is Cryogenic?

[View Answer](#)

Answer

Cryogenic means to work in lower temperature range (-50 and below than that).

- What are the key components of control loop?

[View Answer](#)

Answer

A closed control loop in a very basic manner consists of sensor, transmitter, controller, signal converters and final control elements. Actually in a practical loop there will be many other instruments apart from this to support the working of above mentioned instruments.

- What is the use of valve positioner?

[View Answer](#)

Answer

Valve positioner can be used for following reasons:

- Quick action
- Valve hysteresis
- Viscous liquids
- Split range.
- Line pressure changes on valve
- Bench set not standard
- Reverse valve operations

- Why thermo wells are used? What materials are used in thermo wells?

[View Answer](#)

Answer

In numerous applications, it is neither desirable nor practical to expose a temperature sensor directly to a material. Wells are therefore used to protect against damage corrosion, abrasion, absorption and high pressure processes. A thermo well is also useful in protecting a sensor from physical damage during handling and normal operations.

Materials used in thermo wells: Stainless steel, Inconel, Monel, Alloy Steel, Hastelloy

- What is the meaning of wet leg & where is it used?

[View Answer](#)

Answer

A process used to determine the differential pressure present within a liquid-filled space.

The formula for determining the differential pressure within a wet leg design is: $d/p = h (SG)$

Where: d/p = differential pressure, h = height of liquid present, and SG = specific gravity

When the process vapors condense at normal ambient temperatures or are corrosive, this reference leg can be filled to form a wet leg. If the process condensate is corrosive, unstable, or undesirable to use to fill the wet leg, this reference leg can be filled with an inert liquid.

- What is the working principle of the magnetic meter?

[View Answer](#)

Answer

An electric potential is developed when a conductor is moved across the magnetic field. In most electrical machinery the conductor is a wire. The principle is equally applicable to a moving, electrically conductive liquid. The primary device of commercial magnetic meters consist of straight cylindrical electrically insulated tube with a pair of electrodes nearly flush with the tube walls and located at opposite end of a tube diameter. This device is limited to electrically conducting liquids. The magnetic meter is particularly suited to measurement of slurries and dirty fluids.

- Explain the burnout feature.

[View Answer](#)

Answer

Burnout provides the warnsug feature of driving indicator at the end of scale, if the input circuit is open. A burnout resistor is provided which develops a voltage drop between the measuring circuit and amplifier. The polarity of the signal determines the direction of the servo drive upon an open circuit in the input.

Upscale burnout: R value 10 M

Downscale burnout: R value 22 M

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[View Answer](#)

Answer

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[View Answer](#)

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PNP: Opposite Results

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[View Answer](#)

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- What is force balance principle? State some of its' advantages.

[View Answer](#)

Answer

Force balance principle: A controller which generates an output signal by opposing torque. The input force is applied on the input bellows which moves the beam. This crackles nozzle back pressure. The nozzle back pressure is sensed by the balancing bellows which brings the beam to balance. The baffle movement is very less about 0.002 for full scale output.

Advantages:

- a. Moving parts are fewer.
- b. Baffle movement is negligible
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- What is the use of double seated valve?

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Primary elements of measuring pressure are:

1. Bourdon Tube
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Types of bourdon tubes:

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The commonly used control valves can be defined as follows:

a. Depending on Action:

Depending on action there are two types of control valves

1. Air to close
2. Air to open

b. Depending on body:

Depending on body there are 4 types of control valves

1. Globe valves single or double seated
2. Angle valves
3. Butterfly valves
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[View Answer](#)

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2. Emitter -ve of meter and base +ve output =High resistance
3. Collector +ve and base -ve output =Low
4. Collector -ve and base +ve output =Low

Emitter: Collector = High resistance

PNP: Opposite Results

7.

8.What is solenoid valve? Where it is used?

A solenoid is electrically operated valve. It consists of solenoid coil in which magnetic plunger moves. This plunger is connected to the plug and tends to open or close the valve. There are two types of solenoid valves:

1. Normally Open
2. Normally closed

Use: It is used for safety purpose in different electric work

- is the working principle of the magnetic meter?

[View Answer](#)

Answer

An electric potential is developed when a conductor is moved across the magnetic field. In most electrical machinery the conductor is a wire. The principle is equally applicable to a moving, electrically conductive liquid. The primary device of commercial magnetic meters consist of straight cylindrical electrically insulated tube with a pair of electrodes nearly flush with the tube walls and located at opposite end of a tube diameter. This device is limited to electrically conducting liquids. The magnetic meter is particularly suited to measurement of slurries and dirty fluids.

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[View Answer](#)

Answer

-
- How D.P. transmitter can be applied to close tank?

[View Answer](#)

Answer

In closed tank, bottom of the tank is connected to the high pressure side of the transmitter. Top of tank is connected to the lower pressure side of the transmitter. In this way vessel pressure can be measured.

- What is the use of valve positioner?

[View Answer](#)

Answer

Valve positioner can be used for following reasons:

- a. Quick action
- b. Valve hysteresis
- c. Viscous liquids
- d. Split range.
- e. Line pressure changes on valve
- f. Bench set not standard
- g. Reverse valve operations

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Use: It is used for safety purpose in different electric work

- What are primary elements of measuring pressure? Which type of pressure can be measured by these elements?

[View Answer](#)

Answer

Primary elements of measuring pressure are:

- a. Bourdon Tube
- b. Diaphragm
- c. Capsule
- d. Bellows
- e. Pressure springs

These elements are known as elastic deformation pressure elements.

- How to use level transmitter in closed tank application?

[View Answer](#)

Answer

In closed systems, the transmitter location is restricted by the maximum allowable distance above the lower tap. In pressurized systems, this is the same as the 1 atmosphere equivalent seen previously. In sub-atmospheric systems (vacuum systems), the transmitter should be mounted at or below the lower tap. This ensures the transmitter always sees a positive pressure on both the measurement and the reference sides. In two seal systems, the distance between the taps becomes the reference offset from zero. The calculations are the same regardless of where the transmitter is mounted.

-

[View Answer](#)

Answer

- Why thermo wells are used? What materials are used in thermo wells?

[View Answer](#)

Answer

In numerous applications, it is neither desirable nor practical to expose a temperature sensor directly to a material. Wells are therefore used to protect against damage corrosion, abrasion, abrasion and high pressure processes. A thermo well is also useful in protecting a sensor from physical damage during handling and normal operations.

Materials used in thermo wells: Stainless steel, Inconel, Monel, Alloy Steel, Hastelloy

- How do you identify an orifice in the pipeline?

[View Answer](#)

Answer

An orifice tab is welded on the orifice plate which extends out of the line giving an indication of the orifice plate.

- What is furnace draft control?

[View Answer](#)

Answer

Balanced draft boilers are generally used negative furnace pressure. When both forced draft and induced draft are used together, at some point in the system the pressure will be same as that of atmosphere. Therefore the furnace pressure must be negative to prevent hot gas leakage. Excessive vacuum in the furnace however produces heat losses through air infiltration. The most desirable condition is that the one have a very slight negative pressure of the top of furnace.

- What are the key components of control loop?

[View Answer](#)

Answer

A closed control loop in a very basic manner consists of sensor, transmitter, controller, signal converters and final control elements. Actually in a practical loop there will be many other instruments apart from this to support the working of above mentioned instruments.

- Explain working principle of lvdt?

[View Answer](#)

Answer

When an AC excitation signal is applied to the Primary Coil (P), voltages are induced in the two Secondary Coils (S). The MAGNETIC CORE inside the COIL WINDING ASSEMBLY provides the magnetic flux path linking the Primary and secondary Coils. Since the two voltages are of opposite polarity, the Secondary Coils are connected series opposing in the center, or Null Position. The output voltages are equal and opposite in polarity and, therefore, the output voltage is zero. The Null Position of an LVDT is extremely stable and repeatable.

When the MAGNETIC CORE is displaced from the Null Position, an electromagnetic imbalance occurs. This imbalance generates a differential AC output voltage across the Secondary Coils which is linearly proportional to the direction and magnitude of the displacement. As shown in the figure, when the MAGNETIC CORE is moved from the Null Position, the induced voltage in the Secondary Coil, toward which the Core is moved, increases while the induced voltage in the opposite Secondary Coil decreases.

LVDTs possess the inherent ruggedness and durability of a transformer and truly provide infinite resolution in all types of environments. As a result of the superior reliability and accuracy of LVDTs, they are the ideal choice for linear motion control.

- What is the use of double seated valve?

[View Answer](#)

Answer

In double seated valves the upward and downward forces on the plug due to reduction of fluid pressure are nearly equalized. It is generally used on bigger size valves and high pressure systems. Actuator forces required are less.

- why use MMWC unit?

[View Answer](#)

Answer

milli meter water column used to measure pressure

- What is zener diode? What is voltage regulator?

[View Answer](#)

Answer

The breakdown region of a p-n diode can be made very sharp and almost vertical diodes with almost vertical breakdown region are known as zener diodes. A zener diode operating in the breakdown region is equivalent to a battery. Because of this current through zener diode can change but the voltage remains constant. It is this constant voltage that has made the zener diode an important device in voltage regulation.

Voltage regulator: The output remains constant despite changes in the input voltage due to zener effect.

- What is the meaning of wet leg & where is it used?

[View Answer](#)

Answer

A process used to determine the differential pressure present within a liquid-filled space.

The formula for determining the differential pressure within a wet leg design is: $d/p = h (SG)$

Where: d/p = differential pressure, h = height of liquid present, and SG = specific gravity

When the process vapors condense at normal ambient temperatures or are corrosive, this reference leg can be filled to form a wet leg. If the process condensate is corrosive, unstable, or undesirable to use to fill the wet leg, this reference leg can be filled with an inert liquid.

-

[View Answer](#)

Answer

- Name different types of bourdon tubes.

[View Answer](#)

Answer

Types of bourdon tubes:

- | |
|------------------------------------|
| 1. C type
2. Spiral
3. Helix |
|------------------------------------|

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[View Answer](#)

Answer

1. How can level control be installed in steam drum for measuring the level of steam drum?
2. What is ultrasonic flowmeter?
3. Differentiate between ultrasonic flowmeter and radar type flow meter.
4. What is the use of temprature compensation?
5. What is modbus?
6. How signals can be taken through modbus?
7. How earthing can be checked?
8. How many ohms are required for proper earthing?
9. Explain signal isolator.
10. Which wiring connection is preferred in motor for industrial use?
11. What do you mean by trim?
12. How DP Transmitter can be calibrated for crude application in floating roof tank?
13. What is the principle of capacitance type level transmitter?
14. How process line mpm calculation is done?
15. Explain PLC Level and its type?
16. What is procedure on mmwc in to tph?
17. How an rtd work, and what volts/current goes to a RTD to measure the resistance?
18. What is consistency transmitter and describe its working?
19. How to calculate MMWC values into tonnes?
20. How can I make calculation to Install level transmitter (DP) for open tank and close tank?
21. What is difference between DO and DI?
22. What is loop1 and loop2 in MTS LT?
23. How to calibration a control valve?
24. What is dry leg calibration and where is it used?
25. How flow can be measured with dp?
26. Why MMWC unit is used?
27. How HART protocol can be connected with control valves?
28. What is the meaning of slope in PH transmeter?

29. What is Difference between PLC and CNC?

30. If we have 450 mm height boiler drum level, so what is span & zero value for a dpt transmitter?

- What is Cryogenic?

[View Answer](#)

Answer

Cryogenic means to work in lower temperature range (-50 and below than that).

- How will you test a transistor with a multimeter?

[View Answer](#)

Answer

1. Emitter +ve of meter and base -ve output =Low resistance
2. Emitter -ve of meter and base +ve output =High resistance
3. Collector +ve and base -ve output =Low
4. Collector -ve and base +ve output =Low

Emitter: Collector = High resistance

PNP: Opposite Results

- if we have 450 mm heighth boiler drum level ,so what is span & zero value for a dpt tranmitter?

[View Answer](#)

Answer

zero will be -400mm and span will be LRV will be -400mm and URV will be 0 mm.

- How would you choose differential range?

[View Answer](#)

Answer

The most common range for differential range for liquid measurement is 0-100. This range is high enough to minimize the errors caused by unequal heads in the seal chambers. It is also dependent on the differences in the temperature of the load lines. The 100 range permits an increased in capacity up to 400. While decrease down up to 20 by merely changing the range tubes or range adjustments.

- What is force balance principle? State some of its' advantages.

[View Answer](#)

Answer

Force balance principle: A controller which generates an output signal by opposing torque. The input force is applied on the input bellows which moves the beam. This crackles nozzle back pressure. The nozzle back pressure is sensed by the balancing bellows which brings the beam to balance. The

baffle movement is very less about 0.002 for full scale output.

Advantages:

- a. Moving parts are fewer.
- b. Baffle movement is negligible
- c. Frictional losses are less

- What is the use of single seated valve?

[View Answer](#)

Answer

The single seated valve is used on smaller sizes where an absolute shut off is required. The use of single seated valve is limited by pressure drop across the valve in the closed or almost closed position.

-

[View Answer](#)

Answer

- What is intrinsically safe system?

[View Answer](#)

Answer

Intrinsic safety is a technique for designing electrical equipment for safe use in locations made hazardous by the presence of flammable gas or vapours in the air. Intrinsically safe circuit is one in which any spark or thermal effect produce either normally or under specified fault conditions is incapable of causing ignition of a specified gas or vapour in air mixture at the most ignited concentration.

- How is automatic reference junction compensation carried out in temperature recorders?

[View Answer](#)

Answer

In automatic reference junction compensation, variable nickel resistor is used. As the temperature changes, so does its resistance. This reference junction compensator is located, so that it will be at the temperature of the reference junction. The reference junction is at the point where the dissimilar wire of the thermocouple is rejoined. This joint is invariably at the terminal strip of the instrument.

- How can a D.P. transmitter be calibrated?

[View Answer](#)

Answer

D.P. transmitter can be calibrated using following steps:

1. Adjust zero of Xmtrs.
2. Perform static pressure test: Give equal pressure on both sides of transmitter. Zero should not shift either side. If the zero shifts then carry out static alignment.
3. Perform vacuum test: Apply equal vacuum to both the sides. Zero should not shift.

4. Calibration procedure: Give 20 psi air supply to the transmitter and vent L.P. side to atmosphere. Connect output of the instrument to the standard test gauge. Adjust zero. Apply required pressure to the high pressure side and adjust the span. Adjust zero gain if necessary.

- How D.P. transmitter can be applied to open tank?

[View Answer](#)

Answer

In open tank the lower pressure side is vented to the atmosphere. All pressure is applied to the high pressure side. This vessel pressure is measured through high pressure side.

- what is difference between differential pressure & delta pressure?

[View Answer](#)

Answer

Differential pressure means difference between high pressure & low pressure
delta pressure means it is the pressure drop..

- Explain the burnout feature.

[View Answer](#)

Answer

Burnout provides the warning feature of driving indicator at the end of scale, if the input circuit is open. A burnout resistor is provided which develops a voltage drop between the measuring circuit and amplifier. The polarity of the signal determines the direction of the servo drive upon an open circuit in the input.

Upscale burnout: R value 10 M

Downscale burnout: R value 22 M

- What is motion balance principle?

[View Answer](#)

Answer

A controller which generates an output signal by motion of its parts. The increase in the baffle is to move towards the nozzle. The nozzle back pressure will increase. This increase in the back pressure acting on the balancing bellows, will expand the bellows. The nozzle is moved upward due to this. The nozzle will move until motion almost equals the input baffle motion.

- Explain the working of an electronic level controller.

[View Answer](#)

Answer

The variation in level of buoyancy resulting from a change in liquid level varies the net weight of the displacer increasing or decreasing the load on the torque arm. This change is directly proportional to change in level and specific gravity of the liquid. The resulting torque tube movement varies the angular motion of the rotor in RVDT providing a rotor change proportional to the rotor displacement, which is converted and amplified to a D.C. current.

- What is Coriolis principle for mass flowmeter?

[View Answer](#)

Answer

This meter uses the Coriolis effect to measure the amount of mass moving through the element. The substance to be measured runs through a U-shaped tube that is caused to vibrate in a perpendicular direction to the flow. Fluid forces running through the tube interact with the vibration, causing it to twist. The greater the angle of the twist, the greater the flow

- What happen if i install my pressure transmitter below the elevation of pipe in natural gas service?

[View Answer](#)

Answer

Pressure transmitter in a gas service shall be installed above pipe line. If it is installed below pipeline, the moisture in the gas service gets trapped in the impulse line and acts like a cushion in your chairs which will provide you erroneous readings lesser than the actual pressure in the pipe line. if pressure transmitter is installed below pipeline, moisture to be collected in a separate condensate point and needs to be drained at a frequent interval .

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- What are de-saturators?

[View Answer](#)

Answer

When, in some processes, e.g. batch processes, long transient responses are expected during which a sustained deviation is present the controller integral action continuously drives the output to a minimum or maximum value. This phenomenon is called 'integral saturation of the control unit'. When this condition is met, then this unit is de-saturated.

- What are the automatic controller MODES?

[View Answer](#)

Answer

Following are the mode of control. Ratio Control, PID Control, PI Control, ON/OFF Control, Cascade Control, Override Control, Feedback Control, Feed Froward Control. These control are can be set in to MAN and AUTO Mode, If this in MANUAL the mode of control is disable, If this is in AUTO the mode of control is enable.

- What is Difference between PLC and CNC?

[View Answer](#)

Answer

CNC (Computer Numerical Control) is a particular application usually to control a multi axis machine tool such as a milling machine or a lathe but also could be a tube bending

machine punch press or similar. The CNC controller is usually a purpose built controller using a micro computer but could be a general purpose computer or a PLC. The forerunner was NC (Numerical Control) before computers were readily available, it used solid state logic and relays, timers etc to provide the application.

A PLC (Programable Logic Controller) is a general purpose logic controller specifically designed to allow the user to create their own application. They select appropriate I/O (Inputs Outputs) and perhaps function modules for purposes such as communications and multi axis servo control and program the PLC to perform the required functions.

- How to trim the pressure transmitter?

[View Answer](#)

Answer

Ensure that you have the necessary document on your hand such as PTW.

Connect a HART Communicator, then close the Tx isolation valve and open the VENT isolation to atmosphere.

Apply LRV and check w/ HART Comm, if the LRV is out, perform TRIM function using HART 375/475

- How would you choose differential range?

[View Answer](#)

Answer

The most common range for differential range for liquid measurement is 0-100. This range is high enough to minimize the errors caused by unequal heads in the seal chambers. It is also dependent on the differences in the temperature of the load lines. The 100 range permits an increased in capacity up to 400. While decrease down up to 20 by merely changing the range tubes or range adjustments.

-

[View Answer](#)

Answer

- Name different parts of a pressure gauge. Explain the use of hair spring in the pressure gauge.

[View Answer](#)

Answer

Pressure gauge includes following components:

- a. 'C' type bourdon tube.
- b. Connecting link
- c. Sector gear
- d. Pinion Gear
- e. Hair spring
- f. Pointer

g. Dial

- Name different types of bourdon tubes.

[View Answer](#)

Answer

Types of bourdon tubes:

1. C type
2. Spiral
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- Explain the working of an enraf level gauge.

[View Answer](#)

Answer

Enraf level gauge is based on the zero powered null balance technique. A displacer serves as continuous level sensing element. A two phase zero motor controlled by a capacitive balance system winds/unwinds the measuring wire until the tension in the weight springs is in balance with the weight of the displaced part immersed in the liquid. The sensing system in balance measures the two capacitance formed by the moving central sensing rod provided by the two capacitor plates and the side plates.

- What is the use of single seated valve?

[View Answer](#)

Answer

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- What are different types of control valves?

[View Answer](#)

Answer

The commonly used control valves can be defined as follows:

a. Depending on Action:

Depending on action there are two types of control valves 1. Air to close 2. Air to open

b. Depending on body:

Depending on body there are 4 types of control valves

1. Globe valves single or double seated
2. Angle valves
3. Butterfly valves
4. Three way valves

- What is force balance principle? State some of its' advantages.

[View Answer](#)

Answer

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[View Answer](#)

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- What is the constant voltage unit?

[View Answer](#)

Answer

The constant voltage circuit consists of a rectifier, CR and a filter capacitor. It is followed by two stages of zener regulation. A bridge configuration is provided to lamp line voltage zener regulation. Regulation 1 and regulation 2 provides relatively provide constant current. Resistors form a bridge that may remove line voltage effects.

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[View Answer](#)

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[View Answer](#)

Answer

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