

What We Learned – Section 1-3

1. A plants is divided into_____
2. Plant control equipment may be installed in
 - Control rooms
 - Rack Rooms
 - Motor Control Centers
 - All of the above
3. Which of the following control standard does DeltaV follow?
 - ISA S88
 - IEC61131-3
 - IEC61804
 - All of the above
4. Which flow measurement is based on the square root of differential pressure drop.
 - Vortex meter
 - Flow based on Orifice Plate Restriction
 - Magnetic flow measurement
 - None of the above

What We Learned – Section 1-3

5. The level of an open tank could be measured using
 - A Liquid level Transmitter
 - An Analytical Transmitter
6. A valve may be purchased with the following characteristics
 - Quick Opening
 - Linear
 - Equal Percentage
 - All of the above
7. The HART protocol is supported by devices that utilize;
 - 2-wire
 - 4-wire
 - Foundation Fieldbus
 - None of the above
8. Which plant drawing is primarily used to document design operating conditions:
 - Plot Plan
 - Process Flow Diagram
 - P&ID
 - Loop Sheet

What We Learned – Section 1-3

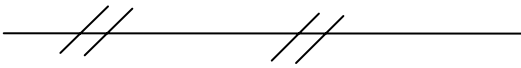
9. The instrument tag of a device is 10LIC502

What is the area number for this device_____

What is the device function_____

What is the loop number _____

10. Which line symbol would be used to represent a pneumatic signal?



11. Would the instrument shown below be accessible by an operator?

Yes

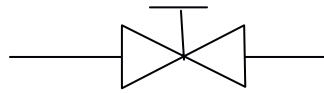


No

What We Learned – Section 1-3

12. Is the following valve instrumented for regulating by a control loops?

Yes



No

13. The following symbol is used to represent which piece of equipment?

Heat Exchanger

Atmospheric tank

Reactor

Pump

Storage



What We Learned – Section 4-5

1. What is the definition of a Process?

2. Which of the following are process output types?

- Constraint
- Disturbance
- Manipulated
- Controlled

3. Is the manipulated parameter the only process input that impacts the controlled parameter?

- Yes
- No

4. A change of 5 % in the manipulated input of a pure gain process results in the process output changing from 10 to 12%. What is the process gain?

What We Learned – Section 4-5

5. A pure delay process is characterized by what parameters?
- Gain
 - Deadtime
 - Time Constant
 - All of the above
6. Is a first-order plus deadtime process linear?
- Yes
 - No
7. Process delay may be caused by which of the following?
- Analyzer sample and processing.
 - Liquid transport.
 - Transmitter processing
 - None of the above
8. A non-self-regulating processes may be characterized by the following parameters:
- Integrating Gain
 - Delay
 - All of the above
9. Would you characterize an inverse response process as linear?
- Yes
 - No

What We Learned – Section 4-5

10. The objectives of most control systems normally fall into the following areas:

1. _____ 2. _____ 3. _____

11. Does reducing process variability through better control always provide improved process economics?

Yes

No

12. When production of a plant is determined by a process limit, you can maximize production by :

Avoid any problems by running far from the limit

Decreasing variability and running close to the limit

Modify the process to eliminate the limitation

All of the above

13. Increasing the complexity of a control system is always justified?

Yes

No

What We Learned – Section 6-7

1. What function blocks are normally used for HIC control?
 - AO
 - PID
 - AI
 - MANLD
 - DO
2. Do the AO setpoint rate limits apply in CAS mode?
 - Yes
 - No
3. For Proportional-only control, which tuning parameters apply?
 - Gain
 - Reset
 - Bias
 - All of the above
4. Which types of control may be applied if the measurement is noisy?
 - P-Only
 - PI
 - PID
 - All of the above

What We Learned – Section 6-7

5. PID control action must be set to compensate for the following?
- Process response to changes in implied valve position.
 - Valve actuator – fail-open or fail-close.
 - Use of derivative in control.
 - None of the above
6. The AO block IO_OPTS selection for “Increase to close” should be selected if the actuator has the following characteristics..
- A positioner is installed on the valve
 - Valve actuator – fails-open on loss of power.
 - The valve does not have a positioner and fails closed.
 - None of the above
7. The mode parameter determines the source of what parameters?
- SP
 - OUT
 - GAIN
 - BIAS
8. Can DeltaV Tune be used to tune the PID that is assigned to a fieldbus device?
- Yes
 - No

What We Learned – Section 6-7

9. Which blocks in general are required to add feedforward dynamic compensation ?

FLTR

DT

LL

RAMP

10. If the dynamics associated with changes in the manipulated parameter match those associated with a change in the measured disturbance, should you add dynamic compensation in the feedforward implementation?

Yes

No

Sometimes

11. What block would be used to provide external summing feedforward?

BG

RATIO

What We Learned – Section 8-10

1. Cascade control should be considered if the process is characterized by the following:
 - Very fast dynamics with no delay
 - Is highly non-linear
 - Can be considered as two processes
 - Control parameter can not be measured.
2. The outer loop of the cascade is also commonly described using this term.
 - Secondary loop
 - Primary loop
 - Override loop
 - Slave loop
 - Master loop
3. An unmeasured disturbance to the outer loop of a cascade will have the following impact.
 - No change will be see in the outer loop.
 - The full impact of the change will be seen in the outer loop
 - The inner loop will correct for this disturbance, reducing its impact on the outer loop

What We Learned – Section 8-10

4. Dynamic reset should be enabled in the primary loop of a cascade?

Yes

No

5. A cascade loop can provide bumpless transfer because of the status and value provided by this connection to the primary loop.

BKCAL_IN

FF_VAL

TRK_VAL

6. Override control required the following blocks ?

Two of more AI

AO

Two or more PID's

CTLSL

All of the above

7. External reset may be used in both PID's that make up an override strategy

True

False

What We Learned – Section 8-10

8. The PID that has been selected in an override strategy is indicated by what parameters?
- BKCAL_OUT [1,2,3]status values
 - The OUT value of the PID matches the CTLSL output value.
 - The PID SP and PV match
 - All of the above
9. DeltaV Tune may be used to tune the PID blocks involved in an override control strategy.
- True
 - False
10. What techniques may be used to address control using two manipulated parameters?
- Split-range control
 - Ratio control
 - Valve position control
 - All of the above.

What We Learned – Section 8-10

11. The characterization of split range control in a control strategy should be determine to give the following characteristics in the control parameters?
- Constant gain over the full range of operation.
 - Varying gain depending on the point of operation
 - A gain of 1 over most of the operating range.
 - None of the above.
12. A control strategy that uses valve position control will immediately respond to a disturbance in the following manner ?
- Full impact is addressed by one valve
 - Both valve are adjusted equally.
 - The valves are sequenced immediately to correct for the disturbance
 - None of the above
13. What is the potential problem of basing Ratio control on SP rather than the PV?
- Ratio will not be maintain under limit conditions.
 - The control may vary because of process noise
 - No problem, either provides the same control performance..