

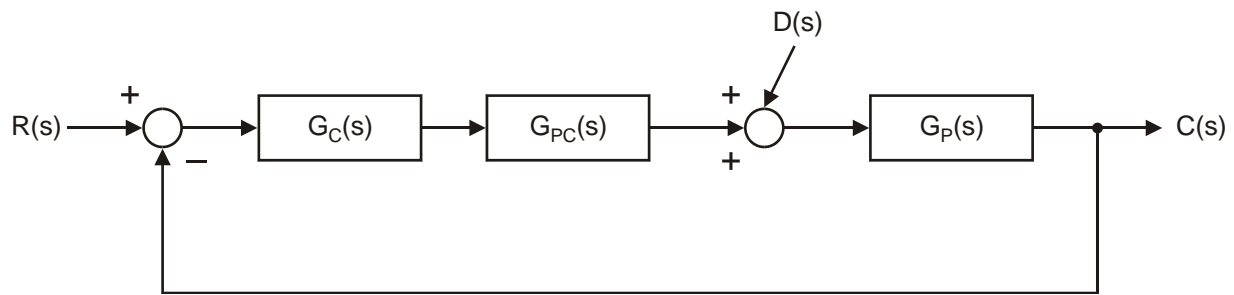
# EC00 - Pre-Instructional Survey

Name: \_\_\_\_\_ Date: \_\_\_\_\_

1. Which of the following control strategies is used to measure disturbances and compensate for them before they cause the controlled variable to deviate from the setpoint?

- A. Feedforward
- B. Feedback
- C. Cascade
- D. Open loop

2. Given the following diagram, what is the transfer function for  $C(s)/R(s)$ ?



A. 
$$\frac{G_C G_{PC} G_P}{1 + G_C G_{PC} G_P G_M}$$

B. 
$$\frac{G_C G_{PC} G_P}{1 + G_C G_{PC} G_P}$$

C. 
$$\frac{G_C G_{PC} G_P G_M}{1 + G_C G_{PC} G_P G_M}$$

D. 
$$\frac{G_P}{1 + G_C G_{PC} G_P G_M}$$

3. What is required to find the MOST efficient operating points that are highly dependent on complex shifting process conditions, such as equipment fouling?
  - A. Real-time optimization with a detailed process model
  - B. Tactical schedulers with business economics
  - C. Linear programs with detailed process economics
  - D. Model predictive controls with a constraint pusher
  
4. Which of the following protection techniques is acceptable for equipment located in a Class I, Division 1 area?
  - A. Explosion-proof apparatus and nonincendive equipment
  - B. Explosion-proof apparatus and intrinsic safety
  - C. Dust ignition-proof and nonincendive equipment
  - D. Hermetically sealed and intrinsic safety
  
5. If you need an enclosure that resists corrosion and provides protection for outdoor use, dust, and hose-directed water, which type of enclosure would you select?
  - A. Type 1 (NEMA 1)
  - B. Type 4x (NEMA 4x)
  - C. Type 12 (NEMA 12)
  - D. Type 13 (NEMA 13)
  
6. How is PID defined in the phrase "PID control loop"?
  - A. Proportional Instrument Device
  - B. Piping Instrumentation Diagram
  - C. Percentage Integration Delta
  - D. Proportional Integral Derivative
  
7. Which PLC programming languages consists of contacts, timers, and counters?
  - A. Sequential Function Charts (SFC)
  - B. Ladder Diagram (LD)
  - C. Function Block Diagram (FBD)
  - D. Structured Text (ST)
  
8. A binary number of 1101 has a hexadecimal equivalent of:
  - A. 8.
  - B. 13.
  - C. A.
  - D. D.

9. A diagram that shows all electrical devices and wiring details specific to a particular physical location is commonly referred to as a(n) \_\_\_\_\_ diagram.
- A. Arrangement
  - B. Termination
  - C. Loop
  - D. Schematic
10. To simultaneously optimize an interacting dead-time dominant process with multiple constraints, one should use a(n):
- A. Override PID control.
  - B. Model predictive control.
  - C. Decoupled PID control.
  - D. Advisory control.

## EC00 – Pre-Instructional Survey Answer Sheet

1. A
2. B
3. A
4. B
5. B
  
6. D
7. B
8. D
9. B
10. B