

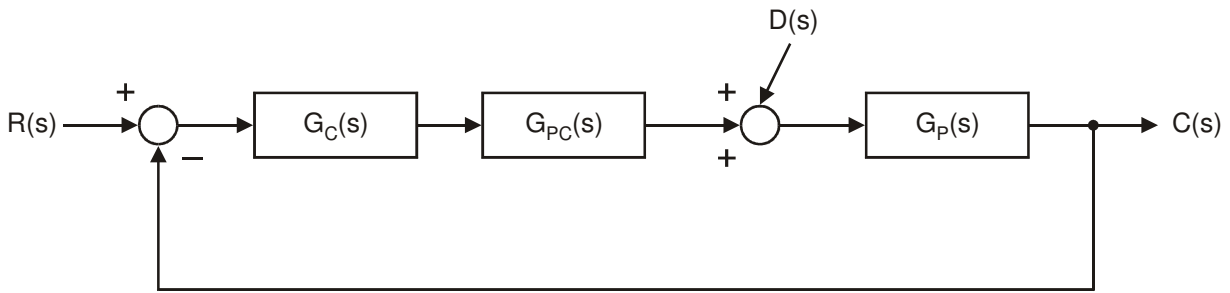
EC00 - Pre-Instructional Survey

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.

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1. A
2. B
3. A
4. B
5. B

6. D
7. B
8. D
9. B
10. B