TC05 - Pre-Instructional Survey

Name: _____   Date: _____
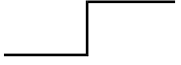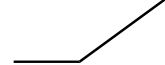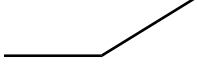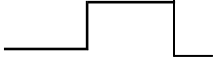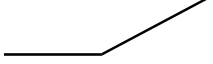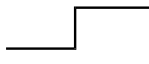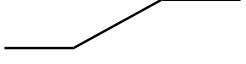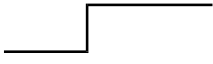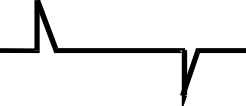
1. A closed loop feedback control system must have the minimum number of components or elements:

    a   3
    b. 2
    c. 4
    d. No minimum number
    e. Any number

2. Feedback control is based on the measurement of which variable?

    a. Disturbance
    b. Controlled
    c. Manipulated
    d. Uncertain
    e. None

3. Select the one sensor characteristic that is most likely to affect the total system gain:

    a. Offset
    b. Response time
    c. Accuracy
    d. Range
    e. All of the above

4. Which of the following will normally be selected to provide "fail safe" conditions on a process?
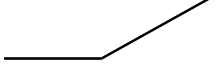
    a. Controller action
    b. Transmitter range
    c. Valve operation
    d. Controller type
    e. Any of the above

Match the following output response for the given input response.
(Output wave shapes can be used more than once.)

Control mode	Input	Answer	Output
5. proportional		_____	a.
6. proportional		_____	b.
7. integral		_____	c.
8. integral		_____	d.
9. derivative		_____	e.
10. derivative		_____	f.

11. Proportional control operates on:

    a. Amount of error
    b. Time of error
    c. Rate of change of error
    d. Presence of error
    e. Disturbance

12. Integral control operates on

    a. Amount of error
    b. Time of error
    c. Rate of change of error
    d. Presence of error
    e. Disturbance

13. Derivative control operates on:

    a. Amount of error
    b. Time of error
    c. Rate of change of error
    d. Presence of error
    e. Disturbance

14. On-off control operates on:

    a. Amount of error
    b. Time of error
    c. Rate of change of error
    d. Presence of error
    e. Disturbance

15. The following should not respond to a setpoint change:

    a. Proportional
    b. On-off
    c. Reset
    d.. Cascade
    e. Derivative

16. Control system tuning:

    a. Can help analyze problems in a control system.
    b. Can best be accomplished in a steady state condition.
    c. Is a means to match the dynamic characteristics of components in a control system.
    d. Requires analysis of a transfer function.
    e. Is usually done by a computer function of the controller.

17. Cascade control has an advantage over single element control systems when:

    a. Precise control is required
    b. Control variable time constants are about equal
    c. Control variable dead times are about equal
    d. There is no dead time
    e. There is considerable difference in control system time constants

18. Feedforward control:

    a. Anticipates the effect of a process change as well as disturbances
    b. Responds to disturbance variables
    c. Requires measurement of control variables
    d. Does not have offset
    e. Requires digital controllers and calculations

19. Feedback controller tuning:

    a. Requires self tuning controllers
    b. Is similar to feedback tuning features
    c. May be empirical or analytical
    d. Is normally not necessary with feedback trim control
    e. Requires special PID algorithm

20. Ratio Control requires

    a. One controller
    b. Two controllers
    c. No controllers
    d. A or B
    e. None of the above
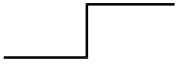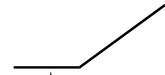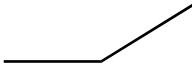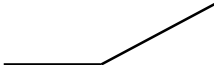
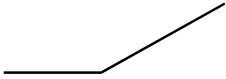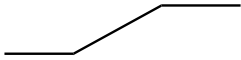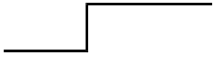# TC05 - Pre-Instructional Survey Answers

Name: _____   Date: _____

1. a. 3 (sensor/ transmitter, controller, final control element)
2. b. Controlled
3. d. Range
4. c. Valve operation

Match the following output response for the given input response.

Control mode	Input	Answer	Output
5. proportional		d	a.
6. proportional		a	b.
7. integral		e	c.
8. integral		c	d.
9. derivative		d	e.
10. derivative		b	f.

11. a. Amount of error
12. b. Time of error
13. c. Rate of change of error
14. d. Presence of error
15. e. Derivative
16. c. Is a means to match the dynamic characteristics of components in a control system.
17. e. There is considerable difference in control system time responses
18. b. Responds to disturbance variables
19. c. May be empirical or analytical
20. d. A or B

1