Assignment 6

The due date for submitting this assignment has passed. Due on 2019-03-13, 23:59 IST.
As per our records you have not submitted this assignment.

1) Which of the following statements is/are true for open loop control systems?

a. Any error in the output can be corrected through a suitable feedback mechanism.

b. A controller generates an actuating signal based on the preset value of the output parameter.

c. PID control can be used for generating the actuating signal.

d. None of these.

2) Which of the following statements are true?

a. In closed loop control system, any error in the output can be corrected through a suitable feedback mechanism.

b. In closed loop control system, the actuating signal is applied based on the value of the output parameter that is observed through a sensing arrangement.

c. ON/OFF controller is more sophisticated than PID controller.

d. All of these.

No, the answer is incorrect.
Score: 0
Accepted Answers:
(b)
3) Which of the following are true for control systems?
   a. The proportional controller improves response time, but results in an increased overshoot.
   b. The proportional-derivative controller results in less oscillation and smaller overshoot.
   c. PID controller is the most difficult to tune.
   d. All of these.
   □ (a)
   □ (b)
   □ (c)
   □ (d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(d)

4) Which of the following is/are false for electromechanical relays?
   a. An electronic switch inside the relay switches on and off a higher power circuit.
   b. There are no moving parts inside the relay.
   c. There is an electromagnet mechanism inside the relay.
   d. All of these.
   □ (a)
   □ (b)
   □ (c)
   □ (d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(a)
(b)

5) What does the normally open (NO) output of the relay module indicates?
   a. When the relay is not activated (normal state), the NO and the common (COM) terminals of the output are connected.
   b. When the relay is activated (triggered state), the NO and the common (COM) terminals of the output are connected.
   c. The NO output never gets connected to the common (COM) terminal.
   d. None of these.
   □ (a)
   □ (b)
   □ (c)
   □ (d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
6) In the experiment for interfacing the bulb with the relay, how is the brightness of the bulb controlled?
   a. By varying the supply voltage of the bulb using PWM control.
   b. By varying the current flowing through the bulb using PWM control.
   c. By varying the duty cycle of the switching using PWM control.
   d. None of these.

   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   (c)

7) The STM32 board does not have a built-in D/A converter. How can D/A conversion be implemented?
   a. By connecting a resistive ladder circuit through the digital output port lines.
   b. By using PWM control on a pin, and using the average value as the analog output.
   c. By using one of the analog input pins on the board.
   d. None of these.

   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   (a) (b)

8) How does an optocoupler work?
   a. Every optical interruption switches on and off an output relay.
   b. Every optical interruption switches on and off a photo transistor.
   c. The output signal is generated through optical to electrical conversion.
   d. None of these.

   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   (b)
9) While calculating the RPM of the motor in Experiment 2, why is the following line used in the code?

\[ \text{RPM} = \text{pulses} \times 60 / 8; \]

(a) Multiply by 60 is to convert from per second to per minute, and divide by 8 is to take into account the 8 slots in the rotary wheel of the motor.

(b) The factor 60 is a scaling factor determined through experimentation, and divide by 8 is to take into account the 8 slots in the rotary wheel of the motor.

(c) Multiply by 60 is to convert from per second to per minute, and divide by 8 is to convert it to ASCII for LCD display.

(d) None of these.

No, the answer is incorrect.
Score: 0
Accepted Answers:
(a)

10) For ambient light control using the LDR sensor, we switch the bulb on and off based on:

(a) A feedback control system that generates a PWM signal to adjust the brightness of the bulb.

(b) A threshold value is used based on which the bulb is either switched on or off.

(c) The LM35 generates a signal based on which the bulb is either switched on or off.

(d) None of these.

No, the answer is incorrect.
Score: 0
Accepted Answers:
(b)