Quiz 3

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IMPORTANT

- Each Question carries 1 mark and you will get 1 attempt each. Total 10 Marks
- **You Need the following figure 1 & 2 in the MCQ**

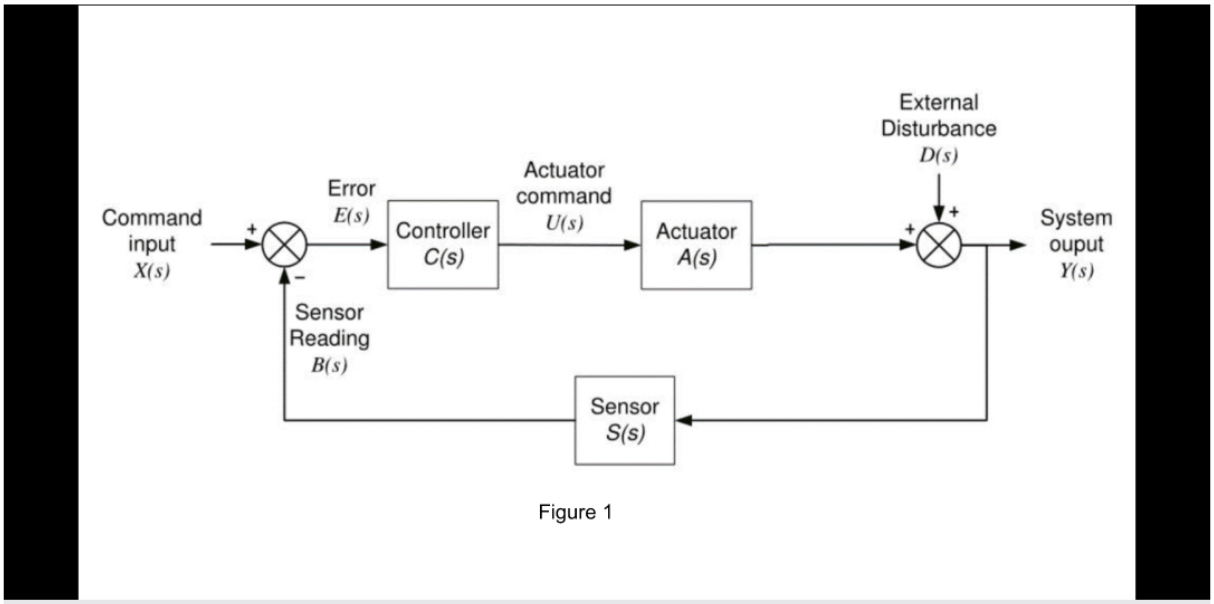

Figure 1

1 Google Slides

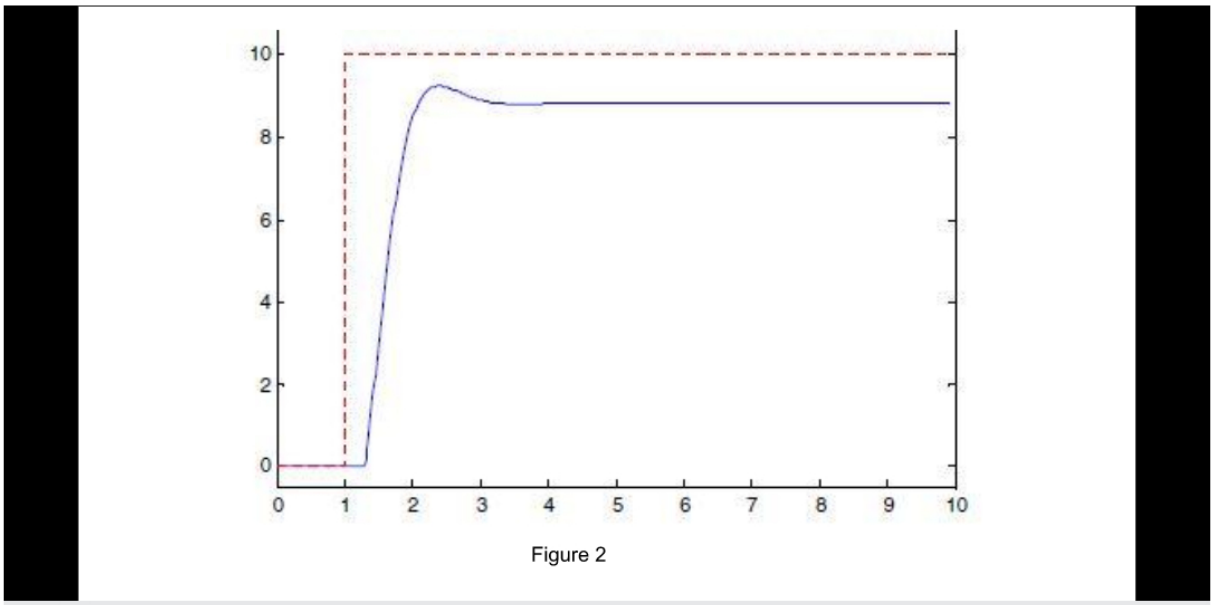

Figure 2

1 Google Slides

Multiple Choice

1/1 point (graded)

In Figure 2 the red line represents a reference (setpoint) input to a closed system. The measured process value is shown in blue. What type of controller is used in this application?

- ○ P
- ○ PI
- ○ PID
- ◉ PD ✔

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Multiple Choice

1/1 point (graded)

A simple proportional control algorithm differs from a PID controller by not looking at

- ○ The present
- ○ The past
- ○ The Future
- ◉ The Past and Future ✔
- ○ All the above

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$$\frac{U(S)}{E(S)} = \frac{K_P + K_I}{S + K_D S} = \frac{K_P S + K_I + K_D S^2}{S}$$

What does K_P represent?

- ○ the time constant of the proportional term
- ○ the time constant of the integral term
- ○ the time constant of the derivative term
- ◉ the constant of proportionality ✔
- ○ none of the above

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1/1 point (graded)

For most control applications, a simple proportional control algorithm after the system has stabilized

will always have a...

- ◯ dynamic error component
- ◯ dynamic error component
- ◯ error frequency
- ◉ Steady-State Error ✔

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Characteristics of Feedback System

- ☑ Power amplification
- ☑ Feedback measurement
- ☐ Graph
- ☑ Error signal
- ☑ Controller ✔

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1/1 point (graded)

Which of the following applications would not benefit from a PID controller

- ◯ motor control
- ◯ control of temperature
- ◯ speed
- ◯ flow rate
- ◉ none of the above ✔

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A PID controller generates the process value (u) by looking at...

- ◯ The present
- ◯ The past
- ◯ The Future

- [ ] the future
- [x] all of the above

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Percentage of final value exceeded at first oscillation is called

- [ ] rise time
- [x] overshoot
- [ ] settling time

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What does variable U(s) represent in Figure 1?

- [ ] setpoint value
- [x] process value
- [ ] process input
- [ ] none of the above

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1/1 point (graded)

In a PID system if the gain K= 2, and oscillation period is 3 then what wil be the value of Kp,Ki and Kd?

- [ ] kp=1.2 ,Ki= .67 kd= .472
- [ ] kp=1.2 ,Ki= .45 kd= .943
- [x] kp=1.2 ,Ki= .67 kd= .375
- [ ] kp=1.2 ,Ki= .38 kd= .575

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