**Setting the control parameters for a second order RLC system.**

In this case we will again look at the influence on the system but now a second order **electric** **cicuit(RLC circuit)**, if you change the control parameters P,I end D.

You change the P,I and D value in the program and look at the parameters involved.

As explained in the theory we have

P: Proportional ~ Stability

I: Integrator ~ Precision (offset)

D:Differentiator ~ Speed

You have to look at how the system reacts if you change these values. You also look at the overshoot when changing the parameters.

You need to connect an oscilloscoop to ths system and set the tile and V/DIV correctly to be able to study this behavior.

Be carefull if the table mentions zero 0 on the simulator you have to use (set) this value at ∞.

1. changing P

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| P | I | D | stability | offset | settling time | overshoot |  |
| 1 | 0 | 0 |  |  |  |  |  |
| 5 | 0 | 0 |  |  |  |  |  |
| 10 | 0 | 0 |  |  |  |  |  |
| 20 | 0 | 0 |  |  |  |  |  |
| 50 | 0 | 0 |  |  |  |  |  |
| 100 | 0 | 0 |  |  |  |  |  |

1. changing I

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| P | I | D | stability | offset | settling time | overshoot |  |
| 5 | 1 | 0 |  |  |  |  |  |
| 5 | 5 | 0 |  |  |  |  |  |
| 5 | 10 | 0 |  |  |  |  |  |
| 5 | 20 | 0 |  |  |  |  |  |
| 5 | 50 | 0 |  |  |  |  |  |
| 5 | 100 | 0 |  |  |  |  |  |

1. changing D(PD)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| P | I | D | stability | offset | settling time | overshoot |  |
| 5 | 0 | 1 |  |  |  |  |  |
| 5 | 0 | 5 |  |  |  |  |  |
| 5 | 0 | 10 |  |  |  |  |  |
| 5 | 0 | 20 |  |  |  |  |  |
| 5 | 0 | 50 |  |  |  |  |  |
| 5 | 0 | 100 |  |  |  |  |  |

1. changing D(PID)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| P | I | D | stability | offset | settling time | overshoot |  |
| 5 | 5 | 1 |  |  |  |  |  |
| 5 | 5 | 5 |  |  |  |  |  |
| 5 | 5 | 10 |  |  |  |  |  |
| 5 | 5 | 20 |  |  |  |  |  |
| 5 | 5 | 50 |  |  |  |  |  |
| 5 | 5 | 100 |  |  |  |  |  |

1. Some more observations
2. What are your conclusions.